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Attorneys for Plaintiffs

**IN THE UNITED STATES DISTRICT COURT
IN AND FOR THE NORTHERN DISTRICT OF CALIFORNIA**

HARRY LEMASTER and CAROLYN
LEMASTER,

Plaintiffs,

vs.

ALLIS-CHALMERS CORPORATION
PRODUCT LIABILITY TRUST, et al.,

Defendants.

No. C08-3316 PJH

DECLARATION OF RICHARD M.
GRANT IN SUPPORT OF PLAINTIFF'S
REPLY TO RELIANCE'S OPPOSITION
TO MOTION FOR REMAND

Date: September 17, 2008
Time: 9:00 a.m.
Court 3, 17th Floor

I, RICHARD M. GRANT, declare:

1. I am an attorney at law duly licensed to practice before the courts of the State of California and am a member of the firm of Brayton♦Purcell LLP, attorneys of record for plaintiff herein. I have personal knowledge of the following facts and, if called upon to do so, could and would competently testify thereto.

2. Attached hereto as Exhibit A is a true and correct copy of "Table I - Materials for pumps", pg. 18 of MIL-P-17840B(SHIPS).

3. Attached hereto as Exhibit B is a true and correct copy of "Uniform Labeling Program - Navy", dated 9/24/56.

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1 4. Attached hereto as Exhibit C is a true and correct copy of "Occupational Health
2 Hazards; Release No. 29" distributed by the United States Department of the Navy on
3 October 19, 1961.

4 5. Attached as Exhibit D is a true and correct copy of "Industrial Hygiene and the Navy
5 in National Defense" written and presented by Captain Ernest W. Bron, M.D. in November,
6 1940.

7 6. Attached hereto as Exhibit E is a true and correct copy of the "Ruling on Motion to
8 Remand" in the matter of *Fortier v. Ampco-Pittsburgh Corp., et al.*, United States District
9 Court for the District of Connecticut, Case No. 3:07-cv-00005 (WWE).

10 7. Attached hereto as Exhibit F is a true and correct copy of the Order Granting
11 Plaintiff's Motion for Remand; Vacating Hearing in the matter of *Leslie Groombridge v.*
12 *Asbestos Defendants (BHC), et al.*, United States District Court - Northern California, Case
13 No. C 00-01654 MMC.

14 8. Attached hereto as Exhibit G is a true and correct copy of the Order 1) Granting
15 Plaintiff's Motion to Remand Case to State Court and 2) Denying as Moot Plaintiff's Objection
16 to Defendant's Supplemental Brief in Opposition in the matter of *Henry Pippins v. Asbestos*
17 *Defendants, et al.*, United States District Court - Northern California, Case No. C 00-1356
18 WHA.

19 9. Attached hereto as Exhibit H is a true and correct copy of the Order Granting
20 Plaintiffs' Motion to Remand in the matter of *Thomas Pippins and Tommie Pippins v. Atlas*
21 *Turner, Inc., et al.*, United States District Court - Northern California, Case No. C 03-3006
22 WHA.

23 10. Attached hereto as Exhibit I is a true and correct copy of "Military Specification
24 Manual, Service (Instruction Books) for Shipboard Electrical and Mechanical Equipment",
25 MIL-M-15071D(SHIPS).

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1 I declare under penalty of perjury that the foregoing is true and correct.

2 Executed this 3rdth day of September, 2008 at Novato, California.

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5 RICHARD M. GRANT
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EXHIBIT A

EXHIBIT A

MIL-P-17840B(SHIPS)

Table I - Materials for pumps.

Application	Material	Specification	Applicable document ^{3 4 5}
Casings	Gun metal Valve bronze Copper-nickel alloy (70-30) Nickel-copper alloy ¹ Steel, highly alloyed ¹	MIL-M-16576 MIL-B-16541 MIL-C-20159 QQ-N-288	ASTM B143, Alloy 1A or 1B ASTM B143, Alloy 2A-B61-52 ACI CN-7M
Studs, bolts nuts	Nickel-copper alloy, rolled, class A or B Naval brass Manganese bronze, class A or B	QQ-N-281 QQ-B-637 QQ-B-728	ASTM B164, Class A or B ASTM B124, Alloy 3-B21-54, Alloy A ASTM B138, Alloy A or B - B124-55, Alloy 4
Impellers	Gun metal Nickel-copper alloy ¹ Copper-nickel alloy (70-30) Steel, highly alloyed	MIL-M-16576 QQ-N-288 MIL-C-20159	ASTM B143, Alloy 1A or 1B ACI CN-7M
Impeller and casing wearing rings ²	Nickel-copper alloy ¹ Gun metal Bearing bronze, grade II or III Valve bronze Steel, highly alloyed Iron, class A (ductile Ni-resist)	QQ-N-288 MIL-M-16576 MIL-B-16261 MIL-B-16541 MIL-I-18397	ASTM B143, Alloy 1A or 1B ASTM B143, Alloy 2A - B61-52 ACI CN-7M
Shafts	Nickel-copper alloy, rolled, class A or B Nickel-copper-aluminum alloy	QQ-N-281 QQ-N-286	ASTM B164, Class A or B
Shaft sleeves	Nickel-copper-aluminum alloy, minimum hardness 265 Brinell Steel, highly alloyed	QQ-N-286	ACI CN-7M
Flinger	Gun metal Valve bronze	MIL-M-16576 MIL-B-16541	ASTM B143, Alloy 1A or 1B ASTM B143, Alloy 2A - B61-52
Lantern rings, glands and throat bushings	Gun metal Valve bronze	MIL-M-16576 MIL-B-16541	ASTM B143, Alloy 1A or 1B ASTM B143, Alloy 2A
Mounting brackets	Gun metal Valve bronze Copper-nickel alloy (70-30)	MIL-M-16576 MIL-B-16541 MIL-C-20159	ASTM B143, Alloy 1A or 1B ASTM B143, Alloy 2A - B61-52
Impeller nuts	Gun metal Nickel-copper alloy	MIL-M-16576 QQ-N-281	ASTM B143, Alloy 1A or 1B ASTM B164, class A or B
Stuffing box packing	Plastic metallic, lead base Flexible metallic	MIL-P-17303 class 1, type B MIL-P-17416	
Casing gaskets	Asbestos, sheet, compressed	MIL-A-17472	

¹ For service in which total head is 324 feet or more.² A wearing ring and its opposing surface shall be of dissimilar material.³ "ASTM" denotes standard specifications of the American Society for Testing and Materials. (Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia 3, Pa.).

(Continued on next page.)

EXHIBIT B

EXHIBIT B

UNIFORM LABELING PROGRAM - NAVI
9/26/55

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DEPARTMENT OF THE NAVY
Office of the Secretary
Washington 25, D. C.

5780.3
SECNAV 5780.3
HNSD-7231-001
24 September 1956

SECNAV INSTRUCTION 5780.3

From: Secretary of the Navy
To: Chief of Naval Material
Chief of Naval Operations
Chief of Naval Personnel
Chief of Naval Research
Chief, Bureau of Aeronautics
Chief, Bureau of Medicine and Surgery
Chief, Bureau of Ordnance
Chief, Bureau of Ships
Chief, Bureau of Supplies and Accounts
Chief, Bureau of Yards and Docks
Commandant, U. S. Marine Corps
Commander, U. S. Navy As Transportation Service

Subj: Uniform Labeling Program for hazardous industrial chemicals and materials

Encl: (1) Markings and Design of Labels
(2) Tentative Label Classification Guide
(3) Elements of a Labeling Program

1. Purpose. The purpose of this Instruction is to standardize on labeling requirements for hazardous chemical products during the usage stage, and to provide selective labels which will contain pertinent information designed to warn users of the potential dangers involved.

2. Scope. This Instruction applies to the labeling of all hazardous materials throughout the Naval Establishment wherever distribution of hazardous chemicals and materials is made to the actual consumer (shop, office, or unit). It applies to materials received from any supply source, provided the material is intended for ultimate use at the local activity. In this regard it refers to labeling of the original container as well as any other container to which the material may subsequently be transferred. This Instruction is not intended to govern:

a. The type of labels to be affixed by the manufacturer. (These are governed by State and Federal laws and regulations depending on the nature of the material and whether the shipment is interstate or intrastate. In addition, most major manufacturers of chemicals abide by the "Warning Labels Guide" published by the Manufacturing Chemists' Association.)

SECRET
24 September 1956

OFFICE OF THE SECRETARY

b. The type of labels to be affixed to containers of chemicals or drugs used, or dispensed, by medical department pharmacies.

c. Those chemicals used by clinical or chemical laboratories, where small quantities of the chemicals are to be used as reagents by trained personnel who are familiar with the potential hazards involved. (The exempted laboratories will be those designated by the various bureaus, offices, and Marine Corps.)

d. The labeling of explosives, gasoline, and fuels, and compressed gases. (These are adequately covered by current instructions.)

3. Background. The rapid development of new chemical products and the introduction of new chemical processes make it mandatory that precautionary measures be taken during the handling of toxic and dangerous chemicals. Warning labels affixed to containers of hazardous chemicals are one of the most practical means of accomplishing this objective. This instruction is based on a composite of the procedures recommended by the Manufacturing Chemists' Association, the International Labor Organization, the American Conference of Governmental Industrial Hygienists, the Atomic Energy Commission, and the labeling programs presently in effect at the Naval Gun Factory, the Alameda Naval Air Station, and the Mare Island Naval Shipyard.

4. Action

a. Navy Department Standardization Office. The Navy Department Standardization Office shall effect the assignment of a limited coordination military (Navy) project in connection with this instruction to standardize the printed labels in respect to quality of paper, size, color, shape, insignia, wording, and design; quality of the glue; specifications for inks (including colors of inks); and other related matters. Enclosure (1) summarizes the markings and designs for labels agreed upon by representatives of the bureaus and offices.

b. Bureau of Supplies and Accounts. The Bureau of Supplies and Accounts shall initiate procedures to have the necessary labels stocked as General Store items for use by all naval activities.

c. The Technical Bureau. The classification of hazardous chemicals and materials shall be accomplished through the joint efforts of the technical bureaus in that each Bureau shall be responsible for passing on these aspects, of any single item, which fall within its technical purview.

OFFICE OF THE SECRETARY

5780-2
SECNAVINST 4280.3
24 September 1956

d. **Safety Precautions Board.** The Safety Precautions Board shall:

(1) Publish in **Safety Precautions (OPNAV 34-21)** a "Label Classification Guide" listing the classification of hazardous chemicals and materials currently in use, as determined by the appropriate technical bureau or office.

(2) Revise the "Label Classification Guide" in accordance with information recurringly provided by the responsible technical bureaus and offices relative to the use of new chemicals and proprietary materials, deletions, and changes in classification.

e. **Bureau, Office, and Marine Corps.** The bureaus, offices, and Marine Corps, shall initiate implementing instructions for use by activities under their management control upon completion of action required by paragraphs 4a, 4b, 4c, and 4d(1), above. Enclosure (3) is an outline of the "Elements of a Labeling Program" for guidance.

P. H. Fogle
P. H. FOGLE
Assistant Secretary of the Navy

EXHIBIT C

EXHIBIT C

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DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D. C.

IN REPLY REFER TO
BUMED-732-mh
6260
19 Oct 1961

From: Chief, Bureau of Medicine and Surgery
To: Activities Submitting Occupational Health Reports (NavMed 576)

Subj: Occupational Health Hazards; Release No. 29

Ref: (a) MANMED 23-21

Encl: (1) List of Occupational Health Hazards (April - June 1961)

1. The Quarterly Occupational Health Hazards Reports (NavMed 576) for April through June 1961, submitted in accordance with reference (a), have been reviewed by the Occupational Health Division (Code 73). Potential health hazards of special interest have been selected from these reports and are forwarded herewith as enclosure (1).

2. The compilation contained in enclosure (1) is intended as a ready reference to current problems, and in some instances will avoid duplication in the solution of these problems. It is also intended to aid Medical Department personnel in the recognition of potentially hazardous materials and processes. Further information regarding specific hazards noted in enclosure (1) may be obtained from the originating activity.

3. The information contained on the composition of materials is to be treated as manufacturer's "Discreet" proprietary information, in accordance with SecNav Instruction 5570.1A of 6 April 1957. It is to be used solely for the control of potentially toxic materials and is not to be released for any other purpose.

A handwritten signature in dark ink, appearing to read "E. C. Kenney".

E. C. KENNEY

Copies to: (2 each)
NDS&RCS
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OCCUPATIONAL HEALTH HAZARDS
Derived from Industrial Health Reports
April 1961 through June 1961

Release No. 29

For Official Use Only

I. Chemical Health Hazards and Their ControlA. Inhalation Hazards Due to Vapors, Fumes, Mists, Gases and Dusts

1. Asbestos Dust. Survey was completed of pipe covering and insulation section. The survey included layout and cutting, molding operations, and sewing of boots and jackets. The layout and cutting are the dustiest operations in the shop. During the handling and unrolling of the asbestos, considerable dust is generated, but appears to settle rapidly. During the layout and cutting, a fine water spray is used for wetting down. Once the asbestos is wetted, the cutting causes very little dust. In addition to this control, ventilation is provided for the operation. Total dust count after wetting and cutting was 2. million particles/cubic foot. (PNSY)

2. Asbestosis. In 1958, a study was begun on pipecoverers (asbestos) working conditions. Chest x-rays and vital capacity test were conducted on asbestos workers. At that time, we had one former employee receiving compensation for asbestosis. According to NCPI 792, pipecoverers are to receive a chest x-ray annually. At LBNS it was decided to give these employees a chest x-ray every six months, alternating a 70 mm with a 14x17. A vital capacity test, using McKesson-Scott equipment, has been given annually. A record has been kept of employees with "remarks" on their 14x17's. (LBNSY)

3. Cadmium Fumes. Certain cable terminal sockets used aboard ship are cadmium plated as a corrosion deterrent. In securing these sockets to cable ends, it is the practice to preheat the sockets prior to pouring the molten zinc into the socket. An acetylene torch is usually utilized for this purpose. Investigation was made of this procedure aboard ship. Ventilation was provided by one five-inch exhaust duct leading to a portable exhaust fan. Air velocity appeared good, rapidly removing visible fumes. The man using the torch wore a metal fume respirator. Other personnel in the compartment did not use protective gear. During the heating of the socket, it was observed to discolor, giving evidence that the cadmium plating was being burned off. Electrostatic precipitator samples were taken and analyzed. Visible deposits resembling cadmium oxide were noted in all cases in the precipitator tubes. Analysis of the samples revealed a concentration of cadmium oxide in the inhalation zones of personnel of 2.1 and 2.4 milligrams per cubic meter of air, 21 to 24 times the threshold limit value of 0.1 milligrams per cubic meter. It was recommended that local exhaust ventilation and air-supplied respirators or metal fume respirators be used. (PSNSY)

4. Cadmium Fumes in Silver Brazing. The master of the Pipe and Copper Shop expressed concern over possible health hazards involved in the use of a silver solder in brazing operations by his shop. An investigation was made to determine the methods of use and concentrations of any toxic or hazardous materials which may be formed in the process.

Silver solder is used to braze the joints of piping installed aboard ships. For the majority of joints silver solder #3 is used. Where piping passes through a bulkhead from one compartment to another a steel sleeve is brazed around the pipe to provide an air tight fit. At these points silver solder #4 is used. The silver solder is applied in the following manner. The joint to be brazed is brushed with a paste flux. Then it is heated with an oxy-acetylene torch. After the proper temperature has been reached the silver solder is melted and allowed to run into the joint. The operation takes about 5 to 10 minutes with approximately one half of the time spent in heating the work before the application of the silver solder. Larger joints such as those 6 inches or more in diameter will take somewhat longer.

The major hazard arises when silver solder #4 is used. This solder has cadmium as one of its constituents, whereas silver solder #3 contains no cadmium. Since cadmium vaporizes readily at the temperature of an oxy-acetylene torch there could be a substantial amount of this metal in the air.

Air samples were taken at various locations aboard ship and in the shop area while the brazing operation using the solder containing cadmium was being performed. These samples were subsequently analyzed for cadmium content to determine the concentrations of cadmium oxide fume both in the operator's breathing zone and in the immediate area around him.

The air was sampled only during the period that the solder was in a molten state and did not include the preheating period before the application of solder. No exhaust ventilation was used for any sample. All brazing was on copper and brass unless otherwise specified.

The samples were collected on Whatman #41 filter paper using a high volume air sampler at rates of 8-14 cubic feet per minute. The determination of cadmium was made using a dithizone extraction according to the method of B. E. Saltzman, Anal. Chem. Volume 25, P. 493, March 1953. The results indicated that in some operations the concentration of cadmium oxide is significantly above the MAC of 0.1 mg/M^3 and that respiratory protective devices and local exhaust ventilation is necessary. (NYNSY)

5. Cresol Vapor. A study was conducted of an aircraft engine parts cleaning shop to determine the concentrations of cresol vapors and aerosols in the air. Under normal conditions, phenols and cresols are not considered inhalation hazards, but under conditions in the shop, vapors and aerosols are liberated by air movement, escape of volatiles, and cleaning of parts by steam or solvents under pressure. A total of 948 samples were collected during 85 days by means of a sequential sampler, and 255 of these

samples were threshold limit or above. In two locations the limit was exceeded by 31% and 41% of the samples collected. At one location the average daily concentration exceeded the threshold limit on six days and at another location, seven days. The highest concentrations were found to be from 0700-0900 and 1200-1400 during the day. During the winter most doors and windows are closed and the ventilation is by leakage. Recommendations have been made for the ventilation of one process. (NASP)

6. Epoxy-Polyamine. Spray painting of aircraft has now been performed on a production scale for six months without any cases of skin irritation or sensitization among the painters. This good record is the direct result of strict adherence to the hygienic precautions developed for this operation. (NASA)

7. Epoxy Resin Accelerator. A workman reported to the Dispensary with a severe headache which he attributed to exposure to an experimental sample of Epoxy Resin. Two one-half pint cans were furnished to the Shipyard by the Minnesota Mining and Manufacturing Company for experimental lamination of steel. The contents of the two cans were mixed and applied in the open air. The exposure time was less than 15 minutes. The can containing the accelerator had an ammoniacal odor. The vapor turned red litmus blue. The base contained ethyl acetate. Information on the type of amine used in the accelerator has not been supplied by the manufacturer. While it appears doubtful that the limited exposure could have caused the alleged symptoms, arrangements have been made to follow closely further experimental applications of resins of this type. (SFNSY)

8. Eye Injury From Paint Remover. A sailor, who splashed paint and varnish remover in his eyes, received 1st degree burns of the cornea. Recovery was complete after a few days on the hospital ship USS HAVEN. The paint remover was methylene chloride which is very dangerous to the eye. Protective clothing and goggles must be worn. (LBNSY)

9. Gasoline, Fire. A variety of high test fuels are used in checking parts in the carburetor test shop. A faulty electrical connection caused an explosion and fire in the shop. The four men working in the shop received only minor burns but the blast blew open a door and a passing mechanic was engulfed in flames, resulting in critical injuries from second and third degree burns of the head, face, neck, trunk and extremities. The accident was caused when the reverse polarity of a defueling pump created a different potential between the pump housing and the test stand, causing an arc, which set off explosion. (NASP)

10. Hydrogen Sulfide. The Supervisors Coordination Center, Pier No. 1, contains an expansion joint. This opening allows the odor from decaying organic matter (hydrogen sulfide) to enter the room. The odor is especially noticeable during early morning low tides with ships heads emptying directly into the water. The condition does not present a health hazard. Due to the odor, however, the room is not used to its best advantage. The following

recommendations were suggested:

1. Seal the joint with tape or rubber gaskets.
2. Allow adequate ventilation by proper use of doors and windows, or
3. Maintain a positive pressure in the room with supply air ventilation. (LBNSY)

11. Hypochlorite, Chlorine Gas Generated in Cleaning With. Chlorine gas escaping from a head which was being cleaned resulted in temporary evacuation of an office occupied by military personnel. Concurrent use of bowl cleaner and hypochlorite resulting in evolution of chlorine gas was the cause of the disturbance. No one was significantly effected by the gas. Colored decals depicting the hazard resulting from this mixture were posted on the walls of the head. (NASSD)

12. Insulating Material on Electric Wire. An electrician reported an illness following an exposure to a fume resulting from the decomposition of insulation on an electric wire which was being used in rewiring an electric motor. Short leads were being soldered to openings cut in the cable and the soldering iron was found to be coming in contact with the coating resulting in a fume. An investigation indicated that the wire covering was composed of polyvinyl chloride. This work was subsequently transferred to a ventilated booth and no further difficulty has been experienced. (NASSD)

13. Laminac. Evaluation was made of the hazard potential involved in the handling of Laminac, a polyester resin, by the Sheetmetal Shop. One of the additives used with the resin is antimony trioxide and recommendations were made to prevent inhalation of the latter material during mixing, handling, and grinding operations. (PHNSY)

14. Lead Coated Surfaces, Welding on. Complaints of respiratory irritation by employees welding and burning on superstructure coated with a vinyl red lead primer were found to be due to hydrogen chloride gas; concentrations of less than 1 ppm were detected and although below the permissible limit, were noticeably irritant. The lead concentration in air presented a significant health problem; 0.70 mg. per cu. meter of lead was found in the breathing zone of the welder. Urine samples of personnel on this job showed normal lead values since the work had not been done for more than a few days. It was recommended that air supplied respirators be worn when burning metal surfaces coated with lead bearing paint and that coating be removed from areas which are to be welded. It was further recommended that no coating containing lead be applied until welding and burning on these surfaces is complete. (PoNSY)

15. Lead in Sandblasting of Ships. Because of the use of lead-containing primer coatings on ship's hulls, a possibility exists of excessive lead exposure from dust created by sandblasting operations. Air samples were

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taken to evaluate this possibility. Atmospheric samples were taken in a dry dock while the hulls of two destroyers were being sandblasted. Samples were taken 30 to 100 feet from the actual blasting in the visible dust cloud. Lead content of the samples ranged from 0.2 to 1.9 milligrams of lead per cubic meter of air, exceeding the threshold limit value. Sandblasters use air-line respirators. It was recommended that other personnel whose duties require them to work in the dusty area of such sandblasting operations repeatedly or for periods of time exceeding four hours, be required to wear an approved dust filter respirator. (PSNSY)

16. Lead In Torch Cutting of Ships. The literature lists a number of cases of lead poisoning occurring in private industry where obsolete Naval ships are being scrapped. Paint scrapings were taken from a discarded FRAM superstructure at this activity and analyzed for lead. 3.1 percent of lead was found. It is considered, therefore, that torch cutting of these scrapped superstructures present a lead hazard. Atmospheric samples will be taken at the next opportunity during work of this nature. (PSNSY)

17. Magnaflux or Sonoflux magnetic inspection powders do not significantly increase concentrations of toxic gases and fumes when welding or burning on metal surfaces treated with these powders. Complaints of discomfort of employees working in Magnafluxed tanks, particularly where the gray powder had been used, initiated a study of the operation which included analysis of the powder and environmental air sampling. The powders contain iron as a principal constituent; the red powder is colored by a red dye and the gray powder has 7% titanium to impart the gray color. Fume and gas concentrations are not significantly higher where Magnaflux powders were used; however, sampling did disclose excessive concentrations of carbon monoxide (200 to 400 ppm), oxides of nitrogen (2 to 17 ppm) and iron fumes (50 to 83 mg. per cu. meter), typical of welding and carbon arc gouging in confined spaces. The following health precautions were recommended:

- a. Provide all confined spaces with adequate exhaust ventilation.
- b. Air supplied respirators should be mandatory for all carbon-arc gouging operation.
- c. Accumulations of magnetic inspection powder shall be removed before welding or burning operations are started. (PoNSY)

18. Mercury. A health survey was conducted in the Electronics Shop. Electronic switches and conductors are treated with a mercury amalgam solution. The amount of mercury used and the manner of its use presented no health hazards to the employees. (PNSY)

19. Toluene Diisocyanate. Foam-in-place polyester-diisocyanate core material, specification MIL-C-8087B (ASG) is used in the Plastics Shop to stiffen some of the fins in aircraft radar systems. A pint glass bottle of the TID component was accidentally dropped on the concrete deck. In a

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short time eye and respiratory tract irritation among the personnel in the room became so severe that the room had to be evacuated and force ventilated. Two hours after the incident the TID concentration in the room air was 0.65 parts per million. The aeration was continued overnight and the deck was thoroughly flushed with strong ammonia solution. The air was free from toluene diisocyanate in the morning. No delayed reactions developed among the exposed personnel. (NASA)

20. Trichloroethylene was being used for cleaning an oxygen line extending from a vessel in a Dry Dock to a centrally located oxygen supply line between the Docks. Supervisors were reminded of the potential hazard of trichloroethylene and the operation conducted without incident. Compressed nitrogen was used to evaporate the residual trichloroethylene from the line. (SFNSY)

21 Confined Space Incidents

a. Airline Respirator for Protection Against Dust in Confined Space. Two sailors assigned the task of wire brushing several fresh water tanks aboard a vessel in port complained that the dust produced was causing great discomfort in spite of the twin cartridge dust respirators which they were wearing. After investigating the condition, it was recommended that they be provided with airline respirators and that exhaust ventilation be arranged if possible. (BNSY)

b. Zinc Fumes. One employee working as a welder's helper aboard the USS CARBONERO was treated at the Dispensary for symptoms resembling those of metal fume fever. Subsequent inspection revealed the probable cause to be zinc fumes during the welding of brackets, although the burn-off of vinyl paint residuals prior to welding undoubtedly also contributed to the situation. The need for respiratory protection in all welding operations in poorly ventilated areas was emphasized. (PHNSY)

c. Paint. Two sailors were given treatment at the Dispensary after having been overcome by paint vapor while working in the forward ammunition storage areas aboard a Naval vessel. The incident was caused by the spillage of approximately five gallons of a "Coating, pretreatment, Formula 117" in a poorly ventilated area. The material is made up of the following chemical constituents: pigment - zinc chromate, magnesium silicate, and lamp black; vehicle - polyvinyl-butyl resin in butyl and ethyl alcohol. Acid component - phosphoric acid, water, and ethyl alcohol. Appropriate recommendations were made for effective ventilation requirements and respiratory protection to prevent a recurrence. (PHNSY)

d. Solvent Spraying. Navy personnel were engaged in spraying trichloroethylene in a fire room of a ship. A generator armature was placed on the grating of the fire room floor and the trichloroethylene was sprayed from above and below. No ventilation or respiratory protection was utilized. One man was rendered unconscious and the other became violently ill. Since the men were taken directly to the Naval Hospital, the Industrial Hygiene Division was not notified until some time after the occurrence. An air

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sample taken with the Kitagawa sampler about twenty minutes after the men were removed showed about 100 ppm trichloroethylene in the exposure area. The hazards associated with the use of solvents, proper control measures, and safe work practices in the use of solvents were emphasized. The spraying operation was discontinued. (PSNSY)

e. Void Space Around Shipboard Gasoline Tanks. Two workmen removed access covers from the top of voids adjacent to the Gasoline tanks. After the Gas Tester has certified that the void was free of exposure hazards one of the workmen entered the void. The other was about to enter when he noted that this fellow workman had collapsed at the bottom of the space. He immediately went to help. Service personnel wearing Rescue Breathing Apparatus performed the rescue operation. The man recovered without incident.

Action was taken to assure that oxygen tests are made in the future as required by regulations. The void tanks surrounding Gasoline storage tanks are normally inerted with nitrogen from the shipboard oxygen manufacturing system. (NSYSF)

f. Sewer Manhole. A worker in a sewer manhole, while dislodging an obstruction, lighted a cigarette and ignited flammable gas. Several manhole covers on the line were blown-off and the worker was severely burned. Tests of several manholes on this line showed explosive concentrations of gas but practically no hydrogen sulfide. The explosive gas is believed to be methane from septic sewage. Any source of methane other than the sewage was not identified. Tests of manholes on other sewer lines showed no explosive gas concentrations and very little hydrogen sulfide. Testing for gas in sewer manholes had been discontinued as no positive tests had been obtained for several years. Testing for gas will be done before any worker is permitted to enter a manhole. (NOTS)

B. Ventilation and Other Industrial Hygiene Control Measures

1. Aluminum Cleaning Operation. A request was received for an industrial hygiene review of the proposed aluminum cleaning facility on the Shipyard. It was found that a potential health hazard would exist in the planned use of a cleaner containing phosphoric acid and butyl cellosolve. The latter has a Threshold Limit Value of 50 ppm. Although this concentration is seldom achieved at room temperature, because of the solvent's low volatility at the elevated temperatures planned for the operation in question (140°F), such concentration could be readily achieved. The solvent is also flammable and has a flash point precariously close to the temperature of use.

It was recommended that local exhaust ventilation be provided to forestall personnel exposure and to control excessive humidity. It was also suggested that a push-pull system be considered for the solvent tank.

(MINSY)

2. Beryllium. The Industrial Hygienist was requested to investigate the potential health hazard due to beryllium at NAVORDLAB Corona. Chemical studies with this material are performed under an exhaust hood or in a dry box. The hoods and dry box are filtered with a roughing filter for large particles plus high efficiency AEC type filters. Wipe samples and air samples are taken on a continuing basis by laboratory personnel. These samples are analyzed by a contract laboratory and, to date, all have been within the MAC.

The MAC for "neighborhood" concentrations of beryllium is .01 micrograms per cubic meter. The filters contained in the beryllium exhaust system must keep the "neighborhood" beryllium below this level. Wipe samples beyond these filters indicated some beryllium was passing. Most of this was possibly due to inadequate installation, which has been corrected. Air samples now indicate the beryllium is being properly filtered, a requirement due to the hazardous nature of this material.

The ventilation system of the laboratory is being improved. There is some concern about this new ventilation intake being located less than ten feet from the beryllium hoods exhaust. The wind direction and velocity are uncertain. There could be no assurance the additional safety precaution of relocating the exhaust would be effective, even in the event of a ruptured filter. The following recommendations were made:

- (1) Leave the beryllium exhaust stack in its present location.
- (2) Continue performing wipe and air sampling inside and outside the laboratory.
- (3) Cut access openings beyond the filter in the exhaust ducts to allow for both air and wipe sampling. (LBNSY)

3. Chemical Warfare Agents; Disposal of. The Chemistry Branch of the Material Laboratory informed this office that the air filters on four laboratory hoods were to be replaced and the old ones destroyed by incineration. These hoods were used for work involving highly toxic chemical warfare agents of the organic phosphate type. Arrangements were made to be present when the filters were placed in the incinerator. The old filters were placed in polyethylene bags and sealed with tape. These were then placed in cardboard containers and sealed with tape. A representative of the Material Laboratory was present with a monitoring device during the entire procedure of incineration. At no time were any detectable amounts found in the atmosphere. (NYNSY)

4. Chrome Plating Tank. Chromic acid mist from two recently relocated plating tanks was found to reach a level of 0.3 and 0.15 mg. per cubic meter of air at the breathing zone level. Although the tanks were 36 inches wide, slots were installed on one side only. Ventilation rates on the two tanks were found to be 75 and 88 cfm. per square foot of tank surface. It was recommended that slots be installed on 2 sides of each tank and that a minimum of 120 cubic feet of air per square foot of tank surface be provided.

for ventilation.

(NASSD)

5. Dry Ice. Freeze seals using dry ice or liquid nitrogen at the rate of 10 pounds per 8 hour shift require minimum exhaust ventilation of 200 cfm, positioning the 3" hose within 1 foot and preferably below the seal. Gas-free inspectors were authorized to make the following tests:

a. Tests for carbon dioxide are to be made at fifteen minute intervals for the first hour of freeze and one hour intervals thereafter. Personnel shall be evacuated when the carbon dioxide concentration reaches 1.5% and shall not be allowed to return until ventilation has reduced the concentration to 0.5% or less.

b. Oxygen tests are to be made on the same frequency as carbon dioxide tests. Personnel shall be evacuated when the concentration of oxygen in the atmosphere is 17% or less. (PONSYS)

6. Ethyl Acetate. An investigation was made of ethyl acetate vapors in air during application of plastic vibration damping sheets on a ship. Ventilation was provided by a two-foot circular hole through the hull at floor level through which a three-inch exhaust duct entered. Two five-inch exhaust ducts entered through the compartment door. Four men worked in the compartment. Two wore disposable plastic gloves while handling the contact cement, which is manufactured by Minnesota Mining and Manufacturing Company, and contains ethyl acetate as a solvent. A calibrated combustible gas indicator was used for air tests. The following concentrations of ethyl acetate were found: breathing zone of worker painting cement on sheets, 792 ppm; breathing zone of worker applying sheets to bulkhead, 594 ppm; average amount in work-site atmosphere, 660 ppm. The threshold limit value for ethyl acetate is 400 ppm. Since the exposure was excessive, it was recommended that additional ventilation be provided by the use of a large air mover attached to the opening in the hull. This was installed and solved the problem. (PONSYS)

7. Gasoline Vapor In Plane Cockpit. It was reported that a fuel vapor leak in a T58 twin-seat single engine propeller plane was causing distress to the pilot. Ground and flight tests revealed no significant concentration of vapor as indicated by the David Vaportester. Pressurizing the fuel tanks with nitrogen also failed to reveal any leakage from the source. An improved closure of the cockpit is planned to exclude any access by raw gasoline. (NASSD)

8. Graphic Recording Device, Offensive Odor in Operation. Avionics employees engaged in shop overhaul and repair of graphic recording devices which produce lines on treated paper by passing an electric arc through the paper complained of the offensive odor produced when recorders are in operation. Several employees were of the opinion that the fumes were the cause of occasional headaches. The device is equipped with a small integral exhaust system for the removal of the fumes from the source. However, the exhaust discharges into the cabinet which contains the recorder and associated devices. (This serves

to reduce the concentration by dilution). The unit is airborne equipment. There are provisions for exhausting the cabinet to the outside atmosphere while in flight but no provisions when operated while the plane is on the ground. The fumes emitted by the arc have a sulfur or mercaptan odor. Tests for hydrogen sulfide were negative. Carbon monoxide was present to the extent of 10 ppm in the area immediately above the arc when the exhaust fan was secured. It was concluded that the fumes did not constitute a health hazard. However, it was suggested that portable exhausts discharging to the outside could be used to remove the obnoxious fumes from the cabinets. (NASN)

9. Lead. Extensive lead processing is being performed during the conversion of the USS SPERRY to a nuclear submarine tender. Shipyard personnel have had previous experience in this work during the conversion of the USS NEREUS. All personnel subject to exposure to lead fumes and dust were given a urine porphyrin examination before lead work was begun. This examination will be repeated after completion of the ship overhaul. Protective clothing including coveralls, gloves, metal fume and dust respirators are furnished these employees. (LBNSY)

10. Lead. A survey was conducted of a lead burning operation in the Pipe and Copper Shop. The operation involved the reconditioning of coolers. The process consists of removing old solder by burning out with a torch and then replacing it with new solder. Atmospheric samples taken show that the burning out process expose the workers to lead fumes above the hygienic standards. In addition the ventilation for the soldering operation was inadequate. The recommendations for improving the present exhaust system were carried out and the entire operation is now conducted in a safe manner. (PNSY)

11. Mercury, Control Measures. A reappraisal of the Liquidometer room was made to determine air concentrations of mercury vapor. Since mercury-gauge manometers and instruments are periodically cleaned and refilled in this room, small amounts of mercury occasionally spill and settle in cracks and crevices of the floor. Readings as high as 0.1 mg per cubic meter were found at certain areas of the room. It was requested that a suction type device be used to trap the spilled mercury from the floor and work benches. (BNSY)

12. Mercury, Control of Hazard. The Small Hand Tool Section of the Central Tool Services Shop periodically performs maintenance on compartment testers containing mercury. Considerable spillage of mercury occurs during the emptying and refilling of this equipment and therefore a portion of the shop area is being set aside specifically for mercury handling. The required renovations to the area to adapt it to mercury handling include smoothing a portion of the concrete floor and rendering it impervious with a coat of epoxy resin; rimming this floor area with a stainless steel catch basin; fabricating a stainless steel bench which is to be used exclusively for mercury contaminated equipment. During the preparation of the area by surface grinding, one air sample was obtained of 0.07 mg Mercury/M³. (PHNSY)

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13. Metal Plating Shop: Built-in-Safety. A new consolidated plating shop is almost complete. The Industrial Hygienist participated in planning and designing of this shop throughout its development. Checkout of the ventilation systems prior to acceptance revealed some rather serious shortcomings; these were substantially corrected by the contractor at no additional cost to the Navy. Participation of Industrial Hygienists in planning and designing for new processes and changes can insure better operation of projects requiring controls for health and reduce the frequency of costly additions or later changes. (NASJ)

14. Methyl Bromide, Cylinder Storage. The Supply Department continues to receive fire extinguisher bottles containing methyl bromide. This agent has been replaced by non-toxic trifluorobromo methane. It was found that methyl bromide cylinders in excess of 200 were stored in the flammable storage building and that many of the bottles had not had the ordnance removed. (There had recently been a fire in an area immediately adjacent). It was recommended that all bottles be disarmed immediately and that all bottles be equipped with shipping caps to prevent accidental rupture of the diaphragms. (NASN)

15. Aluminized Hoods and Air-Fed Suits for Welders Working in High Temperatures. The Industrial Hygiene Division has suggested the use of aluminized hoods and air-fed suits for welders exposed to high thermal stress conditions aboard nuclear submarines. Three suits were ordered for experimental purposes, were tested by welders under actual working conditions, and were found to be effective as protection against excessive heat. Consultations are now in progress between the manufacturer and the Medical and Production Departments at Mare Island, relative to certain modifications suggested as a result of this trial. It is intended that the ultimate protection will be provided by an air-fed all aluminized suit. Arrangements for trial of the latter have been made, and delivery is awaited. (MINSY)

16. Rubber Adhesive; precautions in use of. Several compartments aboard a destroyer undergoing conversion in the FRAM project were required to have acoustical dampening material installed. The operation consists of covering the bulkheads with rubber-like tiles held in place by an adhesive.

An inspection was made aboard the ship accompanied by representatives from the Safety Division and Shop Supervision.

The adhesive to be used was the following:

GF 8040-273-8697
ADHESIVE, RUBBER
SYNTHETIC RUBBER BASE
SPEC MIL-A-5092 A (AER) TYPE III
FIRESTONE TIRE & RUBBER CO.
LOXITE 7030

There was a warning label on the container stating that the adhesive was flammable. The adhesive is applied to an entire bulkhead at a time by brush. After fifteen minutes, when it has become tacky, the tiles are set into place. A sample of the adhesive was collected and analysis revealed it to consist of a mixture of acetone and methyl ethyl ketone and

about 5% low boiling naphtha.

It was recommended that the men doing the work wear air-supplied respirators and protective gloves and the same precautions against explosion or fire be followed as in the application of Saran Coatings. Vapor-proof lights are to be used; air-supplied to the compartment for dilution purposes, air exhausted from the compartment to a safe point outside of the ship, and cutting, burning or welding prohibited in adjacent compartments.

(NYNSY)

17. System for Degreasing Electrode Wires. It is necessary that reels of consumable electrode wire for Aircomatic welding be cleaned of all grease and foreign material. An aluminum box has been constructed with spring finger scrapers through which the wire passes. The box is filled with trichloroethylene as a degreasing agent. The wire enters and emerges from the box through gasket-type seals so that no leakage of the solvent is possible. The box is covered and a local exhaust duct is placed over the box. As the wire emerges from the box, it is wiped by hand using paper towels or a rag. Under this procedure, there is no undue exposure to trichloroethylene vapor.

(PSNSY)

18. Ventilation. The Industrial Hygiene Division cooperated with the Temporary Service Shop in development of process sheets showing the air flow of all blowers used for temporary ventilation under varying lengths of ductworks.

(PoNSY)

19. Trichloroethylene in Boiler System Cleaning; Control of Hazard. Several hundred gallons of trichloroethylene were pumped into the boiler systems of a destroyer in port to degrease a preservative compound used during storage of the tubes. The solvent was pumped into the distilling units from fifty gallon drums and heated by means of coils. Upon completion of the degreasing phase, the solvent was pumped back into the drums, and the units flushed with water. A similar operation of this nature in the past had resulted in several men making claims of over-exposure to trichloroethylene while removing the remaining sludge from the boilers. Solvent underlying small pools of water had remained in the boiler compartment and was not detected until workers had agitated these pools while wiping the surface.

To avoid a recurrence of this hazard, the Industrial Hygiene Division designed a small device to draw the solvent remaining after flushing with water into a five gallon closed container. The device consisted of a hand pump attached to copper tubing of sufficient length to reach the entire boiler tank. Personnel working in the boiler were required to wear charcoal filter respirators.

(BNSY)

20. Trichloroethylene as Cleaning Agent in Welding. The use of trichloroethylene as cleaning agent by welders has been investigated and the following instructions have been recommended:

- a. Organic cartridge respirators must be worn when using more than 3 ounces of trichloroethylene per hour.
- b. Adequate ventilation to remove vapors shall be provided.
- c. No welding or burning shall be done when the odors of this solvent are noticeable.
- d. Neoprene gloves shall be worn by personnel using the solvent.
- e. Substitution of a less toxic solvent, methyl chloroform.
(PoNSY)

C. Health Hazards Due to Contact with Skin

1. Fiberglas. Dermatitis developed among several officers and enlisted men building boats in the Hobby Shop. The exposure was most severe during power sanding of the fiberglass-plastic laminated surfaces. It was recommended that personnel contemplating "do it yourself" work with fiberglass be required to familiarize themselves with local instructions which outline the safe methods of work and the needed hygienic measures. The more effective control method by means of exhaust ventilation at the source is not economically feasible for the Hobby Shop at this time. (NASA)

2. Fiberglass Reinforced Epoxy Resin. Employee fitting sheet plastic on superstructure developed dermatitis of face and both forearms from the physical irritation action of the fiberglass dust. Strict personal hygiene practices and washing with cold water were recommended. (PoNSY)

3. Fiberglass Reinforced Polyester Resin. An employee without previous history of skin trouble developed dermatitis of both hands; (fissuring and erythema) after drilling this plastic material for 2 days. Recurrence of swelling and erythema of both hands developed on 2 hours exposure. Patch tests are being done to determine sensitivity of this employee and recommendations for job placement. (PoNSY)

4. Fiberglass Tape. Employee developed dermatitis of both hands from wrapping bus bars with fiberglass tape. He has been instructed to wash hands and arms with skin cleaner and cold water whenever cleanup is necessary. (PoNSY)

5. Lubricating Wax. Man grinding and buffing aluminum propeller blades coated with lubricating wax developed contact dermatitis of the hands and arms. Protective skin creams and gloves were used with good results. (NASQP)

6. Oils. Solvents (Varsol) and hydraulic oils were responsible for 7 cases of contact dermatitis which were eventually under control (with the exception of 1 man) after using protective skin creams and gloves. All

affected personnel were aircraft mechanics working in different areas. One man was transferred to "dry" work for a period of one month. (NASQP)

7. Paint Stripper. This aircraft cleaner, exposed to paint stripping compounds containing cresols, chlorinated hydrocarbons, and ammonia, developed contact dermatitis of the hands. Protective skin creams and gloves were recommended. (NASQP)

8. Photosensitization, Coal Tar Derivatives. A typical photosensitization took place in one individual while working in an outdoor area in direct sunlight, building a wharf. The wood used in the piling was heavily treated with cresol and other coal tar derivatives. A barrier cream of Fend-I was recommended and no further incidents were reported. (PHNSY)

9. Polyurethane Foam Liner in Safety Helmet. An employee developed a severe dermatitis of the forehead from one hour's exposure to the liner on a bump hat. Several other employees were reported to have less severe reactions as a result of wearing of these hats. The liners were found to be thin sheets of polyurethane foam, one side of which is covered with cloth. The manufacturer recommends that the cloth side should be in contact with the skin. Polyethylene liners will be purchased hereafter. (NASSD)

10. Solvent Used as Skin Cleaner. Use of a solvent labeled PSN WH 6850-264-9638 for cleaning the hands of a pipe shop employee resulted in a case of dermatitis. This material is Stoddard Solvent, Type 1, Petroleum Distillate, and is recognized as a primary irritant. The shop was advised to supply approved hand cleaners in this area. (CNSY)

11. Trichlorethylene. Thin film of degreasing solvent (tri-chloroethylene) present on large jet engine parts, was responsible for contact dermatitis of the hands of a mechanic in the handling of these parts. Protective skin creams and gloves were recommended. (NASQP)

12. Wood Resin Sensitization. A woodworker has developed sensitization to pine wood or resin over the past two years. Both hands and face are affected. His condition clears completely when he does not perform woodworking jobs. Patch tests for selective sensitivities are being conducted. (PONSYS)

13. "Zolatone" Interior Finish. A new type of interior finish ("Zolatone") applied by spraying has been adopted by the station for buildings and residences. Several painters have been found to be extremely sensitive to this material when patch tested. Work limitations are being issued for such individuals. As the material is used as a building wall finish, exhaust ventilation and other usual precautions for spray painting are not possible. (NOTS)

II. Noise, Illumination, Heat, Actinic Rays, and Other Environmental Physical Agents Which May Effect Employee Health and/or Efficiency

A. Noise

1. Air-Conditioning System in Auditorium. Excessive noise was reported in a military training auditorium where a new air-conditioning system had been installed. A noise analysis indicated no hearing hazard present. However, a considerable nuisance (communication under noise conditions) was found. To reduce the present overall sound pressure level of 69 db to a normal of 51 db at a distance of 5 feet from the speaking platform, it was recommended that the ventilation ductwork be acoustically treated. The Speech Interference Level Criteria Table 7.3 of the Industrial Noise Manual, published by the A.I.H.A. was used as a reference. (NASQP)

2. C-130 BL Aircraft. During Flight. A noise survey was conducted in flight of a Lockheed, 4 Engine Turbo-Prop C-130 BL aircraft (used in Antarctic operations), revealed a noise hazard present in the cargo compartment area. The survey was made after syncro-phasing of the blades was made with the following results in level-off positions of 13,000 feet:

<u>Octave Bands</u>	<u>Cargo Compartment Sound Pressure Levels</u>	<u>Flight Deck Sound Pressure Levels</u>
<u>CPS</u>	<u>db</u>	<u>db</u>
37.5 - 75	104	92
75 - 150	103	89
150 - 300	102	85
300 - 600	102	79
600 - 1200	101	76
1200 - 2400	102	67
2400 - 4800	103	64
4800 - 9600	102	63

Sound pressure levels were measured with different conditions present (in a climb, with blower on, with blower off), and it was found that they did not vary significantly. Adequate acoustical treatment was found in the flight deck. Personnel from the operating squadron were given audiograms and fitted with ear plugs. (NASQP)

3. Audiograms, Ordnancemen. Repeat audiograms have been given at monthly intervals to ordnancemen assigned to a guided missile static test shop where a hearing conservation program has been in effect for nearly a year. Total time exposure to noise has been reduced as much as practical and ear plugs are worn when the noise source (air turbines) are in operation. A substantial number of employees are known to have hearing deficiencies, but no current decrease in hearing acuity was detected by the repeated audiograms. The time

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and history of the present hearing deficiencies are unknown as no pre-employment audiograms are available for most of the long-time employees of the station.

(NOTS)

4. Boiler Shop. A noise survey in the Boiler Shop revealed noise levels as high as 116 decibels in the 2400/4800 cps range. Noise levels in each octave band between 300 and 4800 cps exceeded 95 decibels in each area of the shop with the exception of office spaces. The report of this survey re-emphasized the hearing conservation program in effect in this Shipyard.

(CNSY)

5. Compensation Claims, Occupational Hearing Loss. Three compensation claims for occupational hearing loss were filed during the report period. One involved a leadingman boilermaker and the other a crane operator in the same shop. Past and present noise surveys in this shop together with octave band analyses reveal noise exposures exceeding presently accepted "damage risk criteria" by a considerable margin. A major portion of this shop has been designated as mandatory for the wearing of ear protective devices. The third claim involved a portal crane operator and the investigation of this latter case has not been completed.

(PHNSY)

6. Ear Plugs. During fitting of ear plugs it was noted that none of the five sizes provided are adequate for fitting a small percentage of the workmen exposed to noise. On several occasions disposable ear plugs were dispensed. These are not always completely satisfactory.

(SFNSY)

7. Hearing Loss Compensation Claims. An attempt is being made to collect data on compensation claims paid and filed for occupational medical conditions occurring in this Shipyard. During recent months, there have been three claims paid for loss of hearing. Two additional claims for loss of hearing have been filed. Noise surveys have been made as part of the investigation of these claims. There have been two claims paid for death due to carcinoma of the lung incident to asbestosis in pipe coverers and insulators and an additional claim has been filed.

(PSNSY)

8. Lead, Use of in Noise Attenuation. A noise attenuation study was conducted in the Foundry using an improved sound barrier employing lead. The information was obtained from an article written in the Lead Industries Association Bulletin #A1A39. The use of layers of lead and plywood combined was very successful in reducing the overall noise level from a chipping hammer. The layers of lead and wood were obtained by using standby shields used in radiography. There is real merit in adopting the use of a high weight plus low rigidity type wall - a combination of lead and wood.

(NNSY)

9. Muffler, Engine Test Stands. Noise levels were obtained in the area outside of the Diesel and Packard engine test stands. The purpose of the test was to evaluate the muffler's effectiveness in attenuating the noise in the area. It was determined that the mufflers did attenuate the noise to be acceptable level. When they became corroded their effectiveness was lost. Good maintenance is necessary to prevent the area from becoming a noise hazardous zone requiring continuous ear protection.

(NNSY)

10. Power Plant. A survey was made of the Public Utilities Division power plant shops. The overall noise levels within the power plant building ranged from 95 to 108 decibels. Hearing protection was recommended. (NASSD)

11. Tinnitus, A3D Aircraft. An engineer worked for 10-15 minutes immediately under a J-57 engine pod on an A3D aircraft operating at fully military power. He was not wearing the required ear protective gear although the rest of the employees working in the area did wear the ear muffs. He developed tinnitus and some loss of hearing which became apparent soon after exposure but which was not reported to the Dispensary for two weeks. The audiogram obtained at that time showed a significant downward threshold shift from the previous test and the man complained of the continued "roaring in the head". He was sent for consultation to the Otolaryngology Clinic at U. S. Naval Hospital, Oakland where the diagnosis of "hearing loss and tinnitus" was made and the man was advised that this condition is very likely a permanent one. The employee was seen several times since but his condition has remained unchanged. It is estimated that his exposure was to noise of 135 to 145 decibels overall intensity. (NASA)

12. Torpedo Engine Test Cell Muffler. A beneficial suggestion involving the use of shop made mufflers on pressure relief vents of the fuel supply tanks of a torpedo engine test cell were evaluated with a sound level meter. Use of the muffler reduced the noise to a level where ear protection was not required. (NOTS)

13. Ventilation. A survey of the noise levels of solvent cleaning booths indicated that overall noise was 92 to 99 db. when fans only were running and 103 to 113 db. when both fans and air hoses were operating. It has been recommended that in view of reported plans for shop layout changes that these cleaning booths be located as far from personnel concentration as practical and installation of acoustical barriers to protect individuals at benches in nearby surrounding areas. Operators of the cleaning booths have been given audiometric tests and provided with hearing protection. (NASSD)

14. Ventilation System Noise; Duplicating Machine. Complaints were received that the ventilation system installed for the control of methanol vapor from duplicating machine operations caused excessive noise. Sound level measurements and octave band analyses were made in several locations in the duplicating machine room, with both the machines and ventilation operating, and with the ventilation alone operating. The overall levels were 70 to 72 decibels with machines and ventilation both operating, and 69 decibels with the ventilation alone being the source of noise. Calculation of speech interference levels indicated a normal voice could be used up to two to four feet. Accordingly, it was felt that reduction of sound levels in this room was not warranted from an economic or health standpoint. (PSNSY)

B. Illumination

1. Classrooms. Lighting in the Training Division classrooms ranged from 20 to 60 foot-candles; in the drafting room it was 90 to 110 foot-candles.

One-hundred and two-hundred foot-candles respectively were recommended. (NASSD)

2. Foundry. A light survey conducted in the foundry showed lighting at work levels to range from 2 to 20 foot candles throughout the shop. Inadequately illuminated areas were caused mainly by the poor condition of the light fixtures and reflectors rather than from the lack of light fixtures. It was recommended that proper maintenance and cleaning of existing fixtures be enhanced to obtain better light distribution. However, the need for additional lighting in the grinding room of the foundry was reported. (BNSY)

3. Light Fixtures, Height From Deck. Light fixtures, both fluorescent and incandescent, are frequently placed close to the surface of high ceiling shops and laboratories. Where clearance is not required for cranes, etc., lowering the fixtures to approximately 12 feet above the deck results in a noticeable increase in useful light at the work level, without additional fixtures or increase current consumption. (NOTS)

4. Reading Rooms and Mess Halls. An illumination survey of the reading and recreation rooms in the enlisted men's barracks revealed that in almost all locations there was insufficient lighting. In some of the reading rooms the illumination levels were as low as 5 foot candles. It was recommended that at least 30 foot candles of illumination be provided for these areas. Illumination surveys of the mess halls revealed that very low illumination levels were present in the food preparation areas and in the food serving areas. It was recommended that the illumination levels suggested by the American Society of Illumination Engineers for such areas be provided for the mess halls. (NASA)

C. Heat

1. IBM Machine Room. In response to complaints of discomfort from personnel in the machine accounting room, the Industrial Hygiene Division made a heat stress survey. Investigation was made on days when the outside temperature was high for this area. One series of measurements followed a period of three days of 80+ degree weather. During the investigation, a five-ton capacity air conditioner was installed for the purpose of keeping the IBM 1401 computer system cool. This had little effect on the results as a whole. Larger portable fans were also brought in during the investigation. Dry bulb temperature, wet bulb temperature, globe thermometer temperature, and air velocities were measured at points covering the entire area. From these data, the Belding and Hatch heat stress indices, maximum permissible exposure hours and relative humidity were calculated. The heat stress indices ranged from a low of 7 to a high of 27. From these data, the following conclusions were derived:

- (1) The machine group air temperature exceeds the outdoor temperature by a few degrees.
- (2) Humidity is within acceptable limits.
- (3) Radiant heat is not a problem.
- (4) Air movement is adequate.

(5) Conditions were very uniform throughout the machine room complex.

(6) There is no physiological limit to the duration of exposure to the heat stress in this area.

(7) The heat stress indices indicate, according to Belding and Hatch, a "mild to moderate heat stress. Where a job involves higher intellectual functions, dexterity, or alertness, subtle to substantial decrements in performance may be expected. Such decrements depend in large measure on individual variations in personnel". Under the observed conditions, it was considered that the heat stress in the machine group did not constitute a health hazard. (PSNSY)

2. A complaint was received concerning high temperature and humidity encountered during the replacement of batteries aboard a submarine. Subsequent inspection revealed the dry bulb temperature to be 86°F., the relative humidity 66%, and the effective temperature 80°F. Considering the high rate of work involved in the manual labor being performed, it was recommended that more air movement be provided in the battery well through the use of portable blowers. (PHNSY)

D. Nonionizing Radiation

1. AN/SPG-55, AN/SPG-37, and AN/SPG-39 Radars. An R-F radiation survey was made aboard a ship to determine the extent of this hazard when operating the following radars: AN/SPG-55, AN/SPG-37, and AN/SPG-39 radars. The instrument used was the Electromagnetic Radiation detector manufactured by the Sperry Electronics Corporation. This instrument responds to all R-F energy over the band 200 mc. to 10,000 mc., regardless of the polarization. The only areas aboard considered to be hazardous to personnel are the 63 Director tube MK63 model 23. Readings of 20 milliwatts/cm² were obtained when Director 4 and Director 5 were on the following bearings:

Director 4 - 011° Train 0° elevation

Director 5 - 021° Train 5° elevation (PNSY)

2. "Flash Burn" from Welding Arc. A welder was hospitalized for 4 days for treatment of conjunctivitis of the eyes resulting from a "welding flash". He had been welding frames by means of the inert gas metal-arc process; two other welders were working close, sometimes within 6 feet. He was using a shade #12 lens in his hood and wearing 1.7 shades "flash" glasses. The cause of the flash was determined to be inadequate shielding between inert gas metal-arc welding operations. Ultra-violet radiation given off by this process is five to thirty times greater than that of conventional welding. The corrective recommended is diligent use of screens, curtains or shields. (Ponsy)

3. Radar Health Hazards Instruction. A station instruction is now in effect to furnish information concerning health hazards associated with

microwave incident to the operation of radar equipment, and to establish regulations for the protection of potentially exposed personnel. Neon lights (N.E. 51, Stock #G.F. 6240, 233-9100) are used as practical safeguard indicators to avoid excessive exposure to microwaves. Eye examinations of exposed personnel are being conducted in accordance with BUMED INSTRUCTION 6260.1A dated 12 August 1961.

(NASQP)

4. A study of the microwave radiation health hazard was conducted at the Guided Missile School on the two newer model radar transmitters.

Industrial Hygiene personnel recently visited the Guided Missile School at Dam Neck for the purpose of evaluating the health hazards associated with microwave and ionizing radiation incident to the operation of the AN/SPG-51 and AN/SPG-55 radar equipment being used for training purposes.

In the vicinity of the transmitter, klystron high voltage tube, of the AN/SPG-51 there was an insignificant amount of ionizing radiation. Film badges located near the potential x-ray source inside the panel indicated a 5 R cumulated exposure after two months. No radiation was detectable outside the panel or received by technicians working in the area. The radar beam located on the roof can be automatically or manually controlled. Using a Sperry Microwave Detector, intensities exceeding the maximum safe limit 10 mw/cm^2 were detected at distances up to 125 feet. The screen barrier at the observation point adequately protects the technician from the R.F. at the closer distance.

In the immediate vicinity of the transmitter, magnetron high voltage tubes, of the AN/SPG-55 there was a maximum ionizing radiation field of 30 mr/hr. However the average intensity at the usual working distance was negligible. Film badges worn by the technicians for one month did not reveal any exposure. When the radar beam is directed into the transmitter power room (A 225A), an energy of 5 - 12 mw/cm^2 is recorded. This position is acquired manually and with the "trigger kill" mechanism on. The openings in the screen mesh over the observation skylite is too large to attenuate the beam completely even though the direction of the radar beam into room can only be directed when special tests are conducted. On the roof at a distance of approximately 100 feet the microwave intensity is less than 10 mw/cm^2 . Behind the screen observation position at distances less than 100 feet the intensity of the radar beam is less than the maximum safe limit. In classrooms within this estimated safe distance the radiation intensity is detectable outside the window. However, through the screen wire normally in place the intensity is completely eliminated.

Results of the study indicate the following:

Shielding located on the roof tops at the observation point for each of the radar beams tested are safe locations for the technicians to assume while the radar beam is energized.

No ionizing radiation hazard exists in the transmitter room.

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Screens on the classroom windows within the safe distances from the AN/SPG-55 should be permanently secured or marked to indicate a "RAD HAZ AREA" exists outside.

The skylite on adjacent transmitter room of the AN/SPG-55 should have an additional layer of screen wire as a barrier against the beam when it is directed in the wrong direction. (BNSY)

III. Ionizing Radiation

1. Cobalt 60. After receiving a report from a nearby Naval Air Station that an electronic tube containing radioactive material had been accidentally broken, instructions were issued for monitoring the area as a preliminary safeguard. No activity over background was found. In addition several fragments including a re-usable disc portion of the tube were placed into a sealed container and transported to the Industrial Hygiene Laboratory for further evaluation. Wipe tests revealed no activity from the fragments indicating that the portion of the tube containing the radioactivity had not been ruptured during the impact. (BNSY)

2. Plutonium - Beryllium. In response to a request by the Mound Laboratory, Monsanto Chemical Company, via BUSHIPS, the dimensional measurements of the plutonium-beryllium source assigned to the Radiac Facility were taken and the results submitted to the requesting laboratory. No deviation from the original measurements of the source was found. (BNSY)

3. Radium. A number of telephone switch boxes, rotary switch boxes and a telephone dial with luminous radioactive markers installed, were found stored in a shipyard shop during a routine survey. These had been recently removed from a carrier undergoing repair and overhaul. The luminous compounds were removed from the equipment by Shop 67 personnel and taken to the U. S. Naval Radiological Defense Laboratory disposal area for final disposition. (SFNSY)

4. Radium 226. At the request of Supply Department personnel, a package marked "radioactive", which was to be shipped to an outside naval establishment was monitored. The caution label stated the contents to be twenty four test samples, each with an intensity reading of 4 mr/hr. After the package was lined with tin foil and crated by Supply Department personnel, the exterior surface intensity was found to be 1.5 mr/hr. (BNSY)

5. Wipe Testing and Decontamination. During the past quarter a total of five hundred sixty six radiac sets were wipe tested. Of this number forty four were AN/PDR 18B sets which had been field changed and showed no presence of contamination. For many of these it was the second and third wipe test since the field change. Nine were 18B sets not field changed and required decontamination only at the window area. Activity counts of the removed sources were found to range from 219 to 40,011 counts per minute. Window wipe counts ranged from background to 17,297 counts per minute. The remaining instruments

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consisted mostly of AN/PDR 27's and 18a's. Exterior wipes of this latter group revealed no activity above background. (BNSY)

6. The Area Operations Office of the Atomic Energy Commission inspected the radioisotope program conducted at this Shipyard under AEC licenses. This inspection included a discussion of the Shipyard's procedures for compliance with Title 10, parts 20, 30 and 31, and for compliance with the conditions set forth under each individual license and amendments. The inspection also included a physical observation of facilities and equipment for radioisotope use and storage. A thorough check of all records was made. The latter included those for radioisotope receipt, accountability, disposal, radiation surveys, leak tests and records of personnel exposure. (CNSY)

7. Radiation and contamination surveys were conducted routinely at various areas of the Shipyard. These areas include the Radiography Group of the Test Laboratory, the Radiac Repair Facility, the Electronics Planning Division, and the radioactive materials storage cage in the Supply Department. (CNSY)

8. The Industrial Hygiene Division assisted the Nuclear Power Division in radiological control aspects of several training programs being conducted in preparing personnel for operations involving work on nuclear powered submarines. (CNSY)

9. Five drums of radioactive waste were received in this Shipyard from a submarine tender. No unusual radiation levels were detected on any of the drums. The waste is being stored in a secured and suitably marked area until disposal can be effected by an AEC licensed contractor. (CNSY)

10. During this quarter the Industrial Hygiene Division leak tested all radioactive sources located in the Shipyard. This was in accordance with the requirements set forth by AEC. The results showed that removable contamination was well below the 0.005 microcuries limit. (CNSY)

11. Extensive gamma graphing is being performed during the conversion of the USS SPERRY to a nuclear submarine tender. The previous experience received on the conversion of the USS NEREUS has proved valuable. Metals Inspection personnel use the gamma graphing equipment within the recommended regulations but with less apprehension. They have had a few minor problems and have handled them without difficulty or over-exposure. Wipe test on the AEC sources have been within the allowable limit of .005 microcuries. (LBNSY)

12. One of the Non-Destructive Test personnel received a technical overexposure to Iridium-192 while making exposures in a ship under construction. The controls for two sources were in the same room. One source was inadvertently reeled out for a short time while two men were placing the film. The source controls have now been clearly identified as the source concerned and existing instructions for locking the control when the source is retracted have been emphasized. Provisions of 10 CFR 20 and NAVMED P-5005 were followed. (MINSY)

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IV. Substitution of Toxic Solvents by Less Toxic Materials

<u>1. Toxic Material</u>	<u>Process</u>	<u>Substituted by</u>
Carbona Cleaning Fluid (Carbon tetrachloride)	Cleaning of the silk screens in a Thermo- fax machine	Methyl chloroform (1,1,1 trichloro- ethane) (PHNSY)

2. A requisition for 55 gallons of tetrachloroethylene was forwarded to the Industrial Hygienist for approval. Investigation revealed the intended use was for cleaning typewriters. It was recommended that a much smaller quantity be issued and that 1,1,1 trichloroethane be substituted for the more toxic tetrachloroethylene. (CNSY)

V. NotesA. General

1. All requisitions made to this Shipyard's supply system for potentially toxic materials must be approved by the Industrial Hygiene Division prior to issue. Thirty-four requisitions were processed during this quarter, ten of which were not recommended for issue because of their toxic properties. (CNSY)

2. Industrial Hygiene information sheets have been issued on: "Prevention of Dermatitis from Epoxy Resins"; "Industrial Respirator Chart"; and "Labeling of Hazardous Chemicals". (Ponsy)

3. The Industrial Hygiene Division has prepared a "Sealed Source Data Sheet" for distribution to each Shipyard activity which is a holder of an AEC license. Distribution was also made to the Radioisotope Committee and to the Shipyard Duty Officer for information to be used in case of emergencies. The information includes the radioisotope, nominal activity, serial number, exact location, date of receipt, assay date, present activity, AEC license, license expiration date, date of last leak test, and contamination level in microcuries. The data given will be made current at intervals of three months. (CNSY)

B. Industrial Hygiene Services Accomplished at Request of Other Commands

1. Mr. Harry Utes, Senior Industrial Hygienist of the NAS Medical Department, conducted a comprehensive industrial hygiene survey at Naval Air Facility, Litchfield Park, Arizona. Recommendations were made regarding precautions to be observed in the use of epoxy resin components; a louvered barrier to restrict the drift of mist during the stripping of aircraft with Turco Cleaner (Mil-R-8633A); a photodosimetry program; and a labeling committee to review safety factors to be observed in the handling of chemicals. (NASSD)

2. Mr. Alex Munton, Head Industrial Hygiene Division of the Shipyard Medical Department, conducted an industrial hygiene survey at USNAS, Brunswick, Maine. (PoNSY)

3. Mr. William T. Marr conducted an industrial hygiene survey at the U. S. Naval Air Station, Los Alamitos. (LBNSY)

4. Mr. Paul Guykendall conducted an industrial hygiene survey at the Marine Supply Center, Barstow, California. (NOTS)

5. Mr. Ronald Byrd conducted an industrial hygiene survey of the Naval Ordnance Plant, Macon, Georgia, and a noise survey of the Marine Corps Supply Center, Albany, Georgia. (NASJ)

6. The Industrial Hygienists of the Shipyard Medical Department conducted a comprehensive industrial hygiene survey of the U. S. Naval Supply Center, Bayonne, N.J. (NYNSY)

7. Mr. Oscar Sobol conducted an industrial hygiene survey of the Naval Supply Depot, Clearfield, Utah. (NASA)

8. Cdr. R. E. Nebelung, MSC, USNR, Industrial Hygiene Officer on the Medical Department staff of the Naval Air Station, conducted a survey of NAD, McAlester, Oklahoma. (NASP)

C. Lectures and Other Educational and Training Activities of Navy Industrial Hygienists

1. The Industrial Hygiene Division of the Shipyard Medical Department provided a display of industrial hygiene equipment for Armed Forces Day. Handout material outlining the scope of the industrial health program was distributed to visitors of the exhibit. Plastic display cases were used to allow "visitor operation" of Radiation survey Instruments, Gamma Alarm, and Mercury in air detection equipment. Approximately 500 persons visited the booth. (PoNSY)

2. Mr. Sal DiLustro, Senior Industrial Hygienist of the Naval Air Station Medical Department, participated in the Fourth Annual Institute sponsored by the University of Rhode Island as chairman of the Industrial Hygiene Seminar.

b. A lecture on the Station's Industrial Health Program to the new supervisors was given by the Industrial Medical Officer and the Industrial Hygienist. (NASQP)

3. Mr. William T. Marr was on 15 days active duty with the Air Force Reserve. During this tour of duty, he attended a Research and Development Symposium concerned mostly with our Armed Forces rocket, missile, and space activities. (LBNSY)

4. Mr. Harry Gilbert delivered a paper "Ultramicrodetermination of Mercury in Blood" at the American Industrial Hygiene Conference, Detroit, Michigan. (NYNSY)

5. The Industrial Hygienists prepared a nine hour training course on "Principle of Radiation and Contamination Control". This was presented to thirty hospital corpsmen and Chiefs attached to the Medical Department in order that they be prepared for Disaster Control and emergencies arising from any radiological incidents. (CNSY)

6. Mr. Jack McElhiney was elected Secretary-Treasurer of the Northern California Section of the American Industrial Hygiene Association. (SFNSY)

7. Mr. Jack McElhiney attended the Health Physics Society meeting at Las Vegas, Nevada, June 11 - 16 1961. (SFNSY)

8. Mr. Paul Cuykendall lectured on Industrial Hygiene and Industrial Health at the sessions of the Safety Training Courses for Division Heads and first level supervisors of the Propellant Development Laboratories and Pilot Plants.

Lectures on Heat Stress and its Control were given this spring at monthly safety meetings in the shops of the Public Works Department, and to groups of ordnancemen. (NOTS)

9. Victor Kindsvatter, D.Sc., gave a lecture on the hazards to be anticipated in the Outside Machine Shop. All of the line supervision in this shop were given this lecture and they in turn passed the information on at Standup Safety Meetings with their men. (PHNSY)

10. A report entitled "Environmental Radioactivity Levels at Portsmouth Naval Shipyard, Feb 1961" summarizes the findings of the Industrial Hygiene Division for the four years to date that this program has been in effect. Sampling of river water, air, and other environments related to the Shipyard began seventeen months before any nuclear submarine became operational to determine what was normal to the area. It was continued since then to protect the shipyard and the community by assuring control of radioactive materials and work, and to demonstrate the effectiveness of such control measures. (PoNSY)

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* Abbreviation in parenthesis listed throughout this Report refer to the following stations:

Naval Shipyard, San Francisco	SFNSY
Naval Shipyard, Mare Island	MINSY
Naval Shipyard, Long Beach	LBNSY
Naval Shipyard, Bremerton	PSNSY
Naval Shipyard, Boston	BNSY
Naval Shipyard, Portsmouth, N.H.	PONSY
Naval Shipyard, New York	NYNSY
Naval Shipyard, Charleston	CNSY
Naval Shipyard, Philadelphia	PNSY
Naval Shipyard, Norfolk	NNSY
Naval Shipyard, Pearl Harbor	PHNSY
Naval Air Station, Alameda	NASA
Naval Air Station, San Diego	NASSD
Naval Air Station, Norfolk	NASN
Naval Air Station, Pensacola	NASP
Naval Air Station, Jacksonville	NASJ
Naval Air Station, Quonset Point	NASQP
Naval Weapons Plant, Washington, D. C.	NWP
Naval Ammunition Depot, Crane	NAD
Naval Supply Center, Oakland	NSC
Naval Ordnance Test Station, China Lake	NOTS

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EXHIBIT D

EXHIBIT D

D.L.S.

INDUSTRIAL HYGIENE AND THE NAVY IN NATIONAL DEFENSE

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One of the most important concerns of the Medical Department of the United States Navy today is industrial hygiene, especially in navy yard practice. This is a situation of ever increasing moment in view of the present era of enormous expansion in naval construction, unparalleled in the history of the United States. This is bringing about a vast increase in the industrial force of the navy yards, and in all probability new problems in industrial hygiene will emerge incident to new materials and processes.

It should be remembered in this connection that the policy of the Navy Department is to allot new naval construction on an equal basis to government and commercial yards. It follows that the commercial establishments are also undergoing rapid development, with an enormous rise in industrial personnel. They will therefore be confronted with problems of industrial hygiene similar to many of those arising in navy yards.

Industrial hygiene is a field which is now undergoing rapid development. This appears to be due to certain significant trends, the most important of which has been the recent setting up of many industrial hygiene units in state or city departments of health through funds released by the passage of the Social Security Act. These trends, in fact, particularly that just mentioned, reflect a definite renaissance of industrial hygiene as a phase of public health in the United States.

This movement is receiving increasing recognition in naval industrial circles, and industrial hygiene is now listed as a specialty of the naval medical officer along with other specialties outside the purely clinical fields, such as aviation medicine, submarine medicine and chemical warfare medicine.

Those just mentioned, however, are concerned primarily with naval personnel. Industrial hygiene, on the other hand, is largely occupied with federal industrial personnel. It therefore follows that the status of the senior medical officer of a major navy yard in relation to the industrial

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department is analogous in many respects to that of the medical director of a large commercial industrial plant. The object of this paper is to present an outline of the administration of industrial hygiene in navy yards, which are the chief industrial units of the Navy.

Mention should be made in this connection of the Subcommittee on Industrial Medicine of the Health and Medical Committee of the National Defense Council. The Surgeon General of the Navy is a member of the latter committee and is represented by two liaison naval medical officers in conjunction with the Subcommittee on Industrial Medicine. Important recommendations pertinent to the Navy and industrial health will result, and many of them undoubtedly will be put into effect.

The term industrial hygiene as applied in the present discussion is used in the specific sense of the prevention and control of occupational disease. The fact may be of interest that the first compensation law for occupational diseases in this country was one passed in 1908 by Congress for United States civil service employees. Compensation laws for industrial diseases have lagged far behind legislation covering accidents. Only sixteen states of the Union provided compensation for one or more occupational diseases up to the year 1937, although all but two provided legislation for accidental injuries.

INDUSTRIAL ORGANIZATION OF NAVY YARDS

The mission of a navy yard is primarily the construction, maintenance and repair of naval vessels. The central administration of navy yards and, in fact, of all industrial shore stations of the Navy is vested in the Assistant Secretary of the Navy, in whose office is the Shore Establishments Division of the Navy Department.

There are eleven navy yards, located as follows: Portsmouth, N. H.; Boston; New York; Philadelphia; Washington, D. C.; Norfolk, Va.; Charleston, S. C.; Mare Island, Calif.; Puget Sound, Wash.; Territory of Pearl Harbor, Territory of Hawaii; and Cavite, Philippine Islands.

In addition, mention should be made of the following specialized industrial plants: the plants for the building of submarines at Portsmouth, N. H., and Mare Island, Calif.; the Naval Gun Factory at the Navy Yard, Washington, D. C., for the production of high caliber naval guns, torpedo tubes and accessories; the torpedo factories at Newport, R. I., and Alexandria, Va., for the manufacture of torpedoes; the powder plant at Indian Head, Md., for the production of Navy smokeless powder; the aircraft factory at Philadelphia for experimental air craft construction and repair; the naval armor plate plant at Charleston, W. Va.; and the Naval Clothing Factory at Brooklyn.

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Organization of the New York Navy Yard.—The New York Navy Yard may be taken as typical of a major yard. Its organization falls under two departments, i. e., the industrial department, headed by a naval captain of the engineering branch, and an operations or military department, under the direction of a naval line captain. As a conservative estimate it may be stated that 90 per cent of the activities of a navy yard are industrial.

Under the industrial manager there are at present twenty-three shops of different types, with a force per shop varying from 30 to 3,200 men. The total number of civil employees of this yard is now approximately 17,000. This is rapidly rising and, it is estimated, will exceed 20,000 in 1941.

EXTENT OF THE CIVILIAN INDUSTRIAL FORCE OF THE NAVY

The combined industrial force of all navy yards is now approximately 130,000. In view of the pending program of naval construction, it is estimated that this number will reach 150,000 in 1941. If made inclusive of all shore stations it will probably be close to 180,000.

In addition to the industrial force of navy yards, one must consider the employee volume in the commercial naval ship-building plants, such as the Newport News and Dry Dock Company, the New York Ship-building Corporation at Camden, N. J., and the Bethlehem concern at Quincy, Mass., which now employ from 12,000 to 15,000 men each. It is a conservative estimate that the combined industrial personnel of all such plants on both the east and the west coast will reach a peak of over 100,000.

ORGANIZATION OF THE MEDICAL DEPARTMENT OF A NAVY YARD

The medical staff of the New York Yard consists of ten medical officers, five dental officers, one nurse, forty-five enlisted men and two civilian clerks. The chief activities with reference to industrial personnel may be summarized as follows:

(a) Preemployment physical examinations. All applicants for federal jobs are examined physically, although the standards for acceptance vary to some extent for different occupations.

(b) Periodic physical examinations. These, of course, are conducted with the object of medical supervision of certain groups of employees exposed to definite potential health hazards, such as foundrymen and spray painters.

(c) Physical examination of federal employees for retirement. This is for evaluation of the degree of disability and opinion as to disposition when total disability is alleged.

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(d) Diagnosis, treatment and disposition of industrial injuries and occupational diseases.

(e) Administration of compensation cases. (f) Industrial hygiene and plant sanitation.

THE INDUSTRIAL MEDICAL OFFICER

An officer of the medical staff of the navy yard is specifically detailed for industrial hygiene administration subject to the direction of the senior medical officer. Figure 1 outlines the scope of his activities.

(a) Advice to the safety engineer. The adequate practice of industrial hygiene in navy yards, as in civil industry, is dependent on the close and efficient correlation of the work of the safety engineer and that of the industrial medical officer. It is essential to obtain a grasp of the functions of both officers in order properly to visualize industrial hygiene administration.

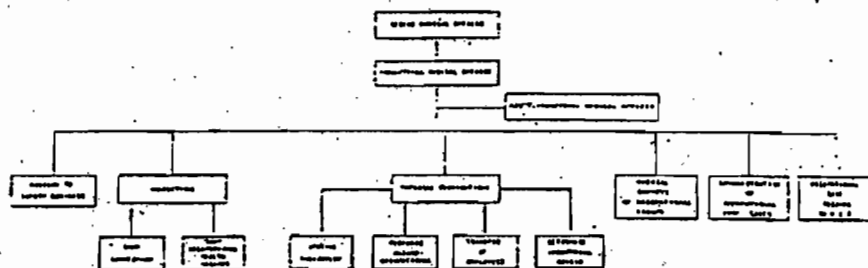


Fig. 1.—Organization for administration of industrial hygiene in navy yards.

(b) Inspection. The industrial medical officer is responsible for the general supervision of plant sanitation, i. e., ventilation, illumination, water supply, general cleanliness and adequacy and condition of sanitary facilities. He also conducts shop inspections for occupational health hazards and measures for their control. He cannot expect to evaluate working conditions and thereby detect occupational health hazards early unless he makes periodic inspections through the plant. In this way he can observe the adequacy of existing measures against specific hazards and decide whether such methods are being properly utilized. These inspections also have a psychologic value, in that they create greater respect for the medical service in the minds of the employees.

(c) Supervision of special physical examinations. This includes handling of preemployment cases when the applicant reports previous exposure to potential industrial health hazards, such as lead fumes or foundry dust; periodic examinations of groups exposed to such potential occupational hazards; e. g., spray painters and sandblasters; examination

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of persons referred for transfer to other shops where there is a question of occupational disability, and clinical studies for a decision as to industrial origin of obscure disabilities. (d) Medical surveys of occupational groups.—This will be discussed later. (e) Administration of the medical aspects of claims for compensation for occupational disease pending before the United States Employees' Compensation Commission. (f) Supervision of preparation of accident and occupational disease reports for the Navy Department.

THE SAFETY ENGINEER

A civilian safety engineer is stationed at the Navy Department as the adviser to the head of the Shore Establishments Division. A naval officer is assigned to each navy yard as the safety engineer.

1. *Accident and Unsafe Practice Control.*—Safety engineering is one of the divisions of the navy yard organizations. The safety engineer conducts an investigation of all lost time accidents with a view to fixing the cause and advising measures to prevent their recurrence. The basic features of approach to the safety problem in navy yards are provision of safety devices, such as mechanical guarding, and the safety education of workmen and their supervisors.

Another important aspect is the competitive approach, which has proved effective in stimulating interest in accident prevention. The Navy Department publishes the comparative safety scores of all navy yards monthly.

Figure 2 emphasizes the advance made by the Navy Department in accident reduction, beginning with an intensive safety campaign in navy yards in 1926. The period covered is from 1926 to 1937 inclusive. The accident rate was lowered from 20 to practically 10 per year in a twelve year period; the severity rate reduced from 2.2 per year to 0.5. On the other hand, it will be noted that the total man hours worked during the period increased to 115 million from 65 million per year, the average number of employees rising from approximately 30,000 to 66,000.

2. *Occupational Health Control.*—The control of occupational disease in navy yards naturally lies within the sphere of both the safety engineer and the industrial medical officer. Although the safety engineer is administratively charged with this task, the medical officer is actually coordinate with him in this phase.

As a matter of fact, the medical officer is the key man in the prevention of industrial disease in navy yards, in that he usually discovers its existence. The diagnosis having been made, the occupational history and the preemployment examination record are carefully reviewed in order to reach a decision, if possible, whether the hazard can be traced

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to present or past employment. If it is ascribed to or aggravated by environmental conditions, the medical officer confers with the safety engineer, and an industrial hygiene survey is usually recommended to the commandant.

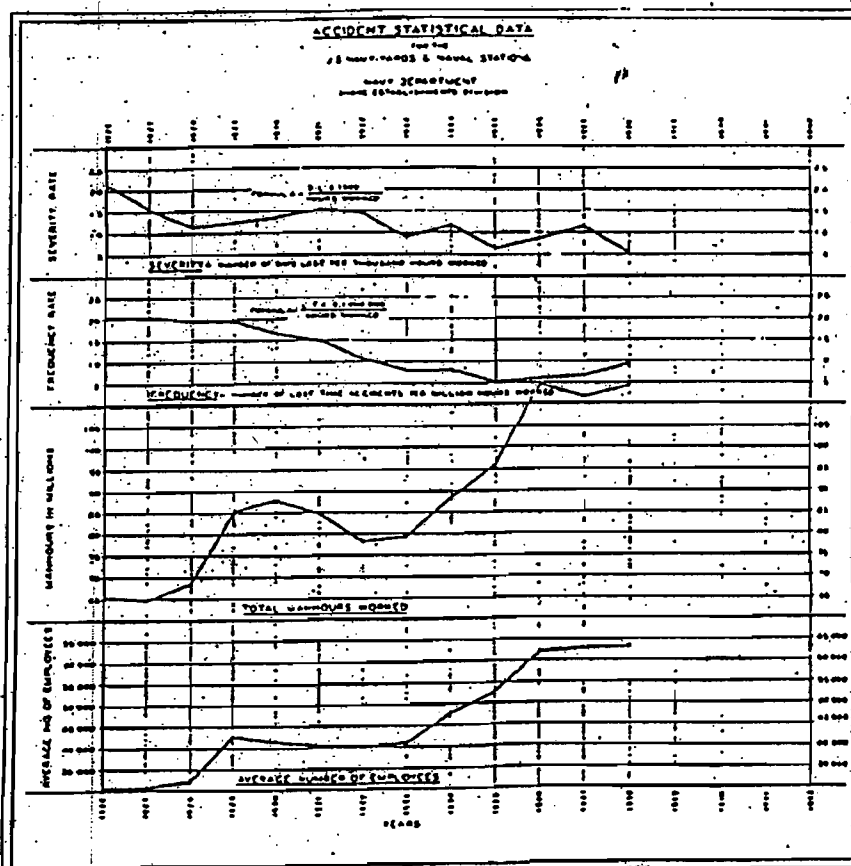


Fig. 2.—Statistical data on accidents for the United States navy yards and naval stations.

THE INDUSTRIAL HYGIENE SURVEY

An industrial hygiene survey is of course a combined medical and engineering task.

1. *The Medical Survey.*—This consists of a complete clinical study, with detailed occupational histories of all exposed personnel as a case-finding procedure under the supervision of the industrial medical officer.

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Although not directly responsible beyond the medical survey, it is important that the medical officer have a reasonable grasp of the entire problem so that he will be in a position to utilize all data that have any bearing on the interpretation of his medical findings. In addition, he may act in an advisory capacity to the safety engineer with respect to certain technical phases in the planning and conduct of the engineering aspects of the survey.

2. *The Engineering Survey.*—The engineering phases of an industrial hygiene survey in a navy yard fall, naturally, under the direction of the safety engineer. As in a commercial industry, this embraces essentially a complete story of the occupational duties, the physical conditions of work, and the materials, processes and equipment of the individual shop; in other words, the environmental conditions.

Laboratory facilities: No facilities are provided for technical studies in the navy yard organization, and there is no central laboratory unit in Washington which could supply industrial hygienists for field studies. This is an urgent need, and recommendations have recently been made to the end of setting up such an agency.

The Navy Department has been most fortunate in the past in securing the services of the Division of Industrial Hygiene of the United States Public Health Service to conduct such technical studies, much in the same way that industries in the states utilize the facilities of state bureaus of industrial hygiene.

The safety engineer formulates the control program of the health hazard on the basis of the data obtained in the survey. After all, once the cause is disclosed, prevention of occupational disease is largely an engineering problem.

THE REPORTING OF INDUSTRIAL ACCIDENTS AND ILLNESS

An important advance in accident prevention by the Navy was initiated on July 1, 1940, when the Secretary directed that a report of each accident and illness, both "lost time" and "no lost time," occurring among civil personnel of navy shore establishments be made to the Bureau of Medicine and Surgery. The report of each accident is submitted on a form, known as form F-C (fig. 3). This presents the diagnosis of the injury and the essential details as to the cause. Punch cards are made up from these records for mechanical tabulating and indexing through a sorting machine. This provides facilities for the statistical analysis of these accidents and diseases, and the data obtained promise to be a far reaching contribution to the subject of accident control. Prior to use of this system a crude system of accident reporting to the department was in effect, but it was not adapted to statistical analysis.

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NAME OF FULL EMPLOYER		DATE OF BIRTH		CODE SHEET DO NOT TYPE IN THIS SPACE	
1	RACIAL ORIGIN	YES <input type="checkbox"/> NO <input type="checkbox"/>	ENGLISH SPEAKING CHECKED		
2	CHIEF	NO OF DEPENDENTS	TOTAL FEDERAL CIVIL SERVICE		
3	CHIEF	MONTHS	MONTHS		
4	PLACE OF EMPLOYMENT	NATURE AND TYPE OF WORK AND SHOP			
5	OCCUPATION	TOTAL TIME AT THIS OCCUPATION	HOW LONG EMPLOYED BY JOB AS WHICH INJURED		
6	INJURY—CAUSE IN FULL OR ACCORDANCE WITH NON-CLASSIFICATION				
7	INJURY NO.	LETTER	SPECIALTY LETTER		
8	TAKEN UP AS	DATE	HOW		
9	DISPOSITION OF CASE	DATE CLOSED	TOTAL TIME LOST		
10	WHAT MACHINE (TOOL, MACHINERY OR DEVICE) WAS MOST CLOSELY CONNECTED WITH ACCIDENT?				
11	IF MACHINE OR VEHICLE, WHAT PART OF IT?—STATE IF CLAMP, MOTOR, ETC.				
12	WHAT WAS EMPLOYEE DOING WHEN ACCIDENT OCCURRED?—DESCRIBE BRIEFLY AS LOADING TRUCK, OPERATING DRILL, PRING, ETC.				
13	WAS MACHINE, TOOL, OR OBJECT DEFECTIVE, IF SO HOW? HAVE CORRECTIVE MEASURES BEEN TAKEN?				
14	HOW DID ACCIDENT HAPPEN? DESCRIBE THE ACCIDENT FULLY STATING WHETHER THE INJURED PERSON FELL ON THE STROKE, ETC. AND ALL THE FACTORS CONTRIBUTING TO THE ACCIDENT.				
15	WAS EMPLOYEE INSTRUCTED CONCERNING SAFE PRACTICES? IF NOT, WHY?				
16	WHAT UNSAFE CONDITION EXISTED?				
17	WHAT UNSAFE ACT ON PART OF INJURED WAS INVOLVED?				
18	WHAT PHYSICAL OR MENTAL CONDITION OF EMPLOYEE MAY HAVE CONTRIBUTED TO ACCIDENT?—AS IMPERFECT VISION, HEARSAYING, ETC.				
19	WHAT FIRST AID WAS PROVIDED?				
OTHER DATA ON INJURY					
THIS CASE SENT FROM				MEDICAL OFFICER'S OFFICIAL	

U. S. G. FORM 100

TO BUREAU OF MEDICINE AND SURGERY

Fig. 3.—Form for report of industrial disability.

BROWN—INDUSTRIAL HYGIENE AND THE NAVY 11

OCCUPATIONAL HEALTH HAZARDS IN NAVY YARDS

The chief potential occupational health hazards in navy yards will now be considered as indicated in the accompanying table. The data are based chiefly on reports to the United States Employees' Compensation Commission over a series of years. It hardly requires emphasis that industrial medical officers must be constantly on the alert for new health hazards.

Occupational Health Hazards in United States Navy Yards

-
1. Dust Diseases
 - (a) Silicosis: foundry workers and sandblasters.
 - (b) Asbestosis: makers of pipe insulating covers
 2. Diseases Due to Lead and Lead Compounds
 - (a) Spray lead painters
 - (b) Brush lead painters
 - (c) Lead putty workers
 - (d) Oxyacetylene welders: cutting and scrapping of ships
 - (e) Handlers of molten lead: preparation of Babbitt metal and lead coating of metals
 - (f) Handlers of lead azide: used in pulverized form as a detonator in naval munitions
 3. Diseases Due to Volatile Organic Solvents
 - (a) Lacquer spray painting
 - (b) Degreasing of machinery: benzene, toluene, xylene, trichlorethylene, higher alcohols, etc.
 4. Diseases Due to Roentgen Rays and Radium
 5. Diseases Due to Welding
 - (a) Nitrous gases
 - (b) Metallic oxides, of potentially toxic nature: manganese, lead, fluorides, silicon, zinc, etc.
 - (c) Zinc fume fever
 - (d) Eye hazards: acute ophthalmia chiefly
 6. Chromate Poisoning: electric platers
 7. Diseases Due to Ingestion of Radium: painters of luminous dials of instruments
 8. Injuries from Nitro Explosives: workers in high explosives, such as T. N. T. and tetryl (tetranitromethylaniline)
 9. Diseases Due to Metallic Dust
 - (a) Excessive pulmonary fibrosis: grinders, buffers and polishers; carborundum, alundum, etc.
 10. Dermatoses: Machine operators from contact with cutting and soluble oils
 11. Diseases Due to Excessive Heat: heat cramps, heat exhaustion and heat stroke
 12. Caisson Disease: diving operations
 13. Functional Disturbances
 - (a) Anoxemia: from entering confined spaces
 - (b) Phosgene poisonings: from carbon tetrachloride used to extinguish fires in confined spaces
 - (c) Carbon monoxide poisonings: incident to oil fires in confined spaces
-

1. *Dust Diseases.*—(a) *Silicosis:* Important units of all navy yards are iron, steel and brass foundries. The dust control problem is a major concern in these plants as in civil industry.

One of the difficulties met with in combating the foundry dust problem in navy yards is the fact that silica (silicon dioxide) dust is not particularly irritating or obnoxious in concentrations which may ultimately lead to pulmonary damage. As a result there is a tendency to an indifference on the part of the workers and even of the supervisors and executives which must be overcome in order to accomplish effective and permanent dust control. Another reason for this attitude is the long period necessary for silicosis to develop in foundry workers exposed to only moderate concentrations of dust, such as molders.

WAR MEDICINE

A medical survey of the foundries of the Navy Yard, Washington, D. C., was conducted by me in 1939. Of 525 men subjected to roentgen examination, approximately 60 per cent had a record of ten years or over and 36 per cent a record of twenty years or over of total foundry employment. Silicosis was found in 12, or 2.4 per cent of the total—in all of them in stage 1 or 2; these data led to recommendations for improved methods of dust control.

Industrial hygiene surveys in foundries other than the Washington Navy Yard have not as yet been carried out but would in all probability disclose a certain incidence of silicosis, even if not of the disabling type. The medical control of silicosis in the naval establishment consists of roentgen examination of the chest before employment and an annual roentgenogram of every man exposed to the higher silica dust concentrations, such as sandblasters and shake-out men.

(b) *Asbestosis*: This is a potential occupation disease hazard due to inhalation of asbestos dust among workers engaged in the manufacture of asbestos insulating covers for flanges, valves and high temperature steam turbines.

I recently conducted a medical survey of the workers of the pipe-insulating shop of the New York Navy Yard, inclusive of roentgen studies. The maximum working period of exposure was seventeen years. No cases of asbestosis were found. Similar findings have been reported from two other yards, but the study should be extended to all men in this trade.

Medical control consists of taking a roentgenogram of the lungs annually. The material is moistened, and localized exhaust ventilation is installed over the work area. A respirator is worn during the dustiest aspect of the process.

2. *Diseases Due to Lead and Lead Compounds*.—Lead poisoning has become comparatively infrequent in recent years both among industrial and among service naval personnel. This is apparently due partly to changes in materials and methods and partly to improved measures of control. Zinc and titanium paints have largely replaced leaded material for ship interiors. Red lead paint is still in use as the priming coat on hull exteriors, but the finishing coats contain either no lead or a greatly reduced proportion. All painters regularly handling lead-containing paint are examined semiannually for evidences of lead absorption.

3. *Diseases Due to Volatile Organic Solvents*.—Lacquer spray painting is done on an extensive scale in navy yards and therefore demands rigid medical supervision. Another important application is in degreasing measures. All spray lacquer personnel are subject to semiannual physical examination.

4. *Diseases Due to Roentgen and Radium Hazards*.—Radium and roentgen rays are continually utilized for the detection of flaws in castings

BROWN—INDUSTRIAL HYGIENE AND THE NAVY 13

and pipe-welded joints for high pressure steam installations. Radium has an advantage in the small size of the equipment in that it is adapted to tests in the confined machinery spaces of ships.

The question of protection from irradiation of the operating and other personnel working in the vicinity of the apparatus has received thorough study, the practice of the Bureau of Standards being generally followed. Complete blood counts of all technicians are conducted quarterly, and special preemployment examinations are prescribed.

Another potential hazard of radium is that of ingestion incident to radium painting of luminous dials, especially for fire control instruments and aircraft. The control measures advised by the Public Health Service are generally in force plus certain local regulations.

5. *Diseases Due to Welding.*—The hygienic supervision of welders is another outstanding feature of medical responsibility. Approximately 2,500 welders were on the rolls of the combined shore establishments as of Jan. 1, 1940, including 653 at New York. This number has progressively increased and will continue to rise.

The immense volume of work in confined spaces is characteristic of naval welding. A battleship of 35,000 tons displacement under construction contains approximately 500 compartments in which electric welding is mandatory; certain of these spaces are extremely small and force the welder to work in very cramped positions. These conditions complicate the question of effective preventive control of the hazards.

The chief hazards which have to be considered at present are "nitrous fume" poisoning, zinc fume fever, as it is popularly termed, and actinic ophthalmia from ultraviolet irradiation of the welding arc. "Nitrous fume" poisoning, while comparatively rare, is a serious condition. No emphasis need be placed on the fact that these injuries would be still further reduced in number if the control measures provided were properly utilized.

It may be of interest to note that in 392 cases of actinic ophthalmia reported at the New York yard in the first ten months of 1940, only 30 per cent of the patients were welders, apprentice welders, helper welders and tack welders; the remaining 70 per cent were men exposed in spaces adjacent to the welding arc or assisting in welding operations but not utilizing available protective goggles.

Chronic poisoning among naval welders from manganese, fluorides or silicon, which might be ascribed to inhalation of these metallic or mineral oxides in the welding fumes originating in the rod coatings, has not been reported. The possibility of such poisoning, of course, cannot be denied.

Limitation of space prevents mention of additional occupational health hazards.

WAR MEDICINE

ANNUAL EXAMINATIONS OF CRANE OPERATORS, ENGINE MEN (HOISTING AND PORTABLE) AND LOCOMOTIVE ENGINEERS

These classes of workers are physically examined annually, with special emphasis on blood pressure, hearing and vision. In view of the nature of their duties, physical failure, such as sudden collapse, might involve critical injury to themselves and others and, in addition, damage to material. If corrective measures are impracticable the worker is retired or transferred to some suitable type of employment. A crane operator, for instance, presenting marked hypertension would be referred to his private physician and transferred to other duties.

LOSS OF TIME FROM INDUSTRIAL VERSUS NONINDUSTRIAL DISABILITIES

In a limited study of 116 industrial companies in various parts of the United States conducted by the American College of Surgeons a few years ago, it was found that the loss of time from nonindustrial types of illness was approximately fifteen times that industrially connected. In my capacity as senior medical officer of the Washington Navy Yard I made the following observations for the calendar year 1938: total industrial force, 7,000; average number of days lost from industrial accidents, 0.14, and average number of days lost from nonindustrial illness or accident, 5.20. The time lost from nonindustrial disability was therefore thirty-seven times that lost from industrial causes. A similar study made by me at the New York Navy Yard for 1939 revealed that the time lost from industrial causes was roughly four times that from nonindustrial causes. The possible factors in the difference between the two yards have not been analyzed.

Disparities of the same general order have been reported in recent statistical studies by certain large commercial industries and reflect an enormous economic loss. Much of this nonindustrial illness is preventable. It is believed that in the naval establishments this wastage due to preventable illness can be greatly reduced if the problem is attacked by an annual physical examination of all employees, men requiring corrective treatment being referred to their private physicians or to other agencies. This would require a heavy increase in medical staffs, but it would be a profitable investment by naval industry in the saving of manpower for national defense. It is a question worthy of being explored.

EXHIBIT E

EXHIBIT E

**UNITED STATES DISTRICT COURT
DISTRICT OF CONNECTICUT**

DAVID H. FORTIER and GAIL FORTIER,

Plaintiffs,

v.

3:07-cv-00005 (WWE)

AMPCO-PITTSBURGH CORP., individually
BUFFALO AIR HANDLING, individually and as
successor to Buffalo Forge Co.,
BUFFALO PUMPS, INC.,
FOSTER WHEELER L.L.C. (survivor to a
merger with Foster Wheeler Corporation)
GENERAL ELECTRIC COMPANY,
PHELPS DODGE INDUSTRIES, INC.¹,
VIAD CORP., f/k/a The Dial Corporation,
individually and as successor in interest to
Griscom Russell Company,
Defendants.

consolidated with:
3:07-cv-00014
3:07-cv-00019

RULING ON MOTION TO REMAND

This action arises from plaintiffs David H. Fortier and Gail Fortier's claims that defendants AMPCO-Pittsburgh Corp., Buffalo Air Handling, Buffalo Pumps, Inc., Foster Wheeler L.L.C., General Electric Company and Viad Corp. ("defendants") supplied or manufactured asbestos or asbestos-containing products that injured David Fortier ("Fortier") during his service as a machinist's mate in the United States Navy from 1968 to 1972. Plaintiffs assert that this exposure to asbestos caused him to contract malignant mesothelioma, the diagnosis of which was rendered on October 5, 2006. Mesothelioma is a fatal disease for which asbestos exposure is the only known cause.

¹Defendant Phelps Dodge Industries, Inc. was dismissed by stipulation dated February 1, 2007 [Doc. #24].

BACKGROUND

On November 28, 2006, plaintiffs filed an asbestos personal injury action in the Connecticut Superior Court, Judicial District of Fairfield at Bridgeport against over 130 defendants, alleging that Fortier was injured as a result of exposure to asbestos while working in Connecticut as a machinist's mate in the Navy during the years 1968 to 1972. On December 1, 2006, plaintiffs filed a second action in the same state court against the seven defendants originally parties to the instant matter (No. 06-5005848-S).² In January 2007, defendants removed this case to federal court pursuant to the Federal Officer Removal statute, codified at 28 U.S.C. § 1442, which permits removal of state actions brought against an officer or agency of the United States, or an individual acting under the auspices of a federal officer.³ 28 U.S.C. § 1442(a)(1).⁴ Mesa v. California, 489 U.S. 121, 125, 109 S.Ct. 959, 103 L.Ed.2d 99 (1989). Plaintiffs now move to remand this case to state court, arguing that this Court lacks subject matter jurisdiction over their claim of failure to warn.

²The original seven defendants included Phelps Dodge, which, as stated above, has since been dismissed.

³These cases were docketed in federal court as 3:07-cv-00005, 3:07-cv-00014 and 3:07-cv-00019. They were transferred to this Court and have been consolidated for the purpose of this motion. Fortier v. AMPCO-Pittsburgh Corp., et al., 3:07-cv-00005.

⁴28 U.S.C. § 1442(a) provides in relevant part: "A civil action or criminal prosecution commenced in a State court against any of the following persons may be removed by them to the district court of the United States for the district and division embracing the place wherein it is pending: . . . 1) Any officer of the United States or any agency thereof, or person acting under him, for any act under color of such office or on account of any right, title or authority claimed under any Act of Congress for the apprehension or punishment of criminals or the collection of the revenue. . . ."

DISCUSSION

A party may remove a case from state court to federal court only if the action is one over which the federal court has jurisdiction. 28 U.S.C. § 1441(a). In order to demonstrate that removal is proper, the movant bears the burden of showing the existence of federal jurisdiction. The rules regarding removal are strictly construed. In re: Methyl Tertiary Butyl Ether Products Liability Litigation, 342 F.Supp.2d 147, 151 (S.D.N.Y. 2004).

Removal is proper if a state law claim is completely preempted by federal law. If a federal statute preempts a state law, then a claim which falls under the penumbra of that statute, even if pled as a state law claim, is properly removed to federal court pursuant to 28 U.S.C. § 1441(b). See Beneficial Nat'l Bank v. Anderson, 539 U.S. 1, 8, 123 S.Ct. 2058, 156 L.Ed.2d 1 (2003) (reversing remand based on applicability of National Bank Act, 12 U.S.C. § 85). Actions brought against federal officers may be removed "despite the nonfederal cast of the complaint;" if the defense depends on federal law, the federal question requirement is met. Jefferson County v. Acker, 527 U.S. 423, 431, 119 S.Ct. 2069, 144 L.Ed.2d 408 (1999).

Defendants rely upon the federal officer removal provision, 28 U.S.C. § 1442(a)(1), for their claim that removal is proper. In order to satisfy the requirements of the statute, defendants must satisfy three elements: 1) that they have a colorable federal defense to plaintiff's claims; 2) that they acted under the direction of a federal agency or officer; and 3) that there is a causal nexus between the conduct in question and the federal authority asserted. Mesa v. California, 489 U.S. 121 at 124 -131. The

federal officer removal statute is construed broadly and "should not be frustrated by a narrow, grudging interpretation." Arizona v. Manypenny, 451 U.S. 232, 242, 101 S.Ct. 1657, 68 L.Ed.2d 58 (1981). Defendants need not show that they will prevail in federal court; they need only demonstrate that section 1442(a)(1) is applicable to the instant matter. Willingham v. Morgan, 395 U.S. 402, 407, 89 S.Ct. 1813, 23 L.Ed.2d 396 (1969).

In order to satisfy the requirement that defendants show that they were acting under the color of a federal agency or officer, defendants must demonstrate that there was direct and specific control on the part of a federal agency or office over defendants' work and that defendants performed the work pursuant to this control. Mesa v. California, 489 U.S. at 131-32.

In this case, defendants must demonstrate that the Navy had complete control over all aspects of their work regarding the manufacture and sale of defendants' equipment to the Navy, that the Navy had the sole authority to dictate the warnings affixed to or provided with the equipment and that defendants complied with these specifications. Plaintiffs must show that defendants did not perform their work only under the auspices of the Navy and that there was some autonomy on the part of defendants as to their fulfillment of the federal contract.

Plaintiffs allege that defendants cannot invoke the Federal Officer Removal Statute as a defense because the federal government did not exercise complete control over defendants' ability to include warnings regarding the presence of asbestos in the turbines. The Court agrees with plaintiffs.

Plaintiffs assert that the Navy, while setting forth explicit requirements regarding

warnings that it, as a federal agency, demands, did not preclude defendants from including other warnings of their own as dictated by state law and regulations. Plaintiffs have provided military specifications ("milspecs") issued by the Navy that specify that its "instruction apply[ing] to the labeling of all hazardous materials throughout the Naval Establishment wherever distribution of hazardous chemicals and materials is made to the actual consumer . . . is not intended to govern: a) The type of labels to be affixed by the manufacturer. These are governed by State and Federal Law and regulations. . . ." Plaintiffs' Ex. F. Defendants, therefore, were free to include warnings not dictated by the Navy. Whether they chose to do so or not is the subject of this lawsuit. It appropriately should be resolved in state court.

CONCLUSION

For the foregoing reasons, the Court GRANTS plaintiffs' motion to remand [Doc. # 8]. The Clerk is instructed to remand this case to state superior court.

Dated this 5th day of March, 2007 at Bridgeport, Connecticut.

/s/

Warren W. Eginton
Senior United States District Judge

EXHIBIT F

EXHIBIT F

FILED

JUN 23 2000

**RICHARD W. WIEKING
CLERK, U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

LESLIE GROOMBRIDGE,

No. C00-01654 MMC

Plaintiff,

**ORDER GRANTING PLAINTIFF'S
MOTION FOR REMAND; VACATING
HEARING**

v.

ASBESTOS DEFENDANTS (BHC), et al.,

Defendants.

INTRODUCTION

Before the Court is plaintiff's motion to remand this action to state court on the grounds that the federal court lacks subject matter jurisdiction over the action. An opposition and reply have been filed. Having considered the papers submitted in support of and in opposition to the motion, the Court hereby VACATES the hearing scheduled for June 23, 2000, and GRANTS the motion.

BACKGROUND

On March 23, 2000, plaintiff Leslie Groombridge filed suit in San Francisco Superior Court, seeking damages for asbestos-related personal injury and disease stemming from his occupational exposure to asbestos-containing products manufactured by Rolls-Royce, PLC, formerly known as Rolls-Royce Allison and Allison Engine Company, Inc. ("Rolls-Royce"). (Compl. at 1.) On May 9, 2000, defendant removed the action to federal court pursuant to 28 U.S.C. §§ 1441, 1442, and 1446. On May 25, 2000, plaintiff filed a motion to remand.

Plaintiff alleges that he was exposed to asbestos while working as a structural

United States District Court

For the Northern District of California

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1 mechanic/aviation officer with the United States Navy between 1956 and 1958. (Not. of
2 Removal at 2.) Specifically, plaintiff claims that he was exposed to asbestos in the course
3 of repairing and maintaining the T56 engines manufactured by Rolls-Royce. (Not. of
4 Removal at 2.)

5 Although, in its notice of removal, defendant asserted multiple bases of federal
6 jurisdiction, defendant, in its opposition, relies solely on the federal officer removal statute,
7 28 U.S.C. § 1442. In that regard, defendant argues the Court has subject matter
8 jurisdiction pursuant to § 1442(a)(1) for the reason that the T56 engine was manufactured
9 by Rolls-Royce "under the authority of an officer or agency of the United States," (Not. of
10 Removal at 3), and that the "United States Government had precise specifications, and
11 exercised the strictest control, over the development of the T56 for its use in military
12 aircraft." (Dft's Opp. at 3.)

13 DISCUSSION

14 A. Legal Standard

15 The existence of federal jurisdiction for removal must normally be determined on the
16 face of the plaintiff's well-pleaded complaint. See Louisville & Nashville R.R. v. Mottley,
17 211 U.S. 149 (1908). The federal officer removal statute provides an exception to the "well-
18 pleaded complaint" rule. See Mesa v. California, 489 U.S. 121, 136 (1989). "Under the
19 federal officer removal statute, suits against federal officers may be removed despite the
20 non-federal cast of the complaint; the federal question element is met if the defense
21 depends on federal law." Jefferson County v. Acker, 527 U.S. 423, 431 (1999).

22 To establish federal officer removal jurisdiction, the defendant must: (1) demonstrate
23 that it acted under the direction of a federal officer; (2) raise a colorable federal defense to
24 the plaintiff's claims; and (3) demonstrate a causal nexus between the plaintiff's claims and
25 the acts the defendant performed under color of federal office. See Mesa, 489 U.S. at 124-
26 25, 134-35. In addition, the defendant must be a "person" within the meaning of §
27 1442(a)(1). See Fung v. Abex Corp., 816 F. Supp. 569, 572 (N.D. Cal. 1992).

28 The party seeking to remove an action has the burden of establishing federal

jurisdiction over a suit originally filed in state court. See id. Any doubt about the propriety of removal is resolved in favor of remand. See Libhart v. Santa Monica Dairy Co., 592 F.2d 1062, 1064 (9th Cir. 1979).

B. Analysis

1. "Person" Under 28 U.S.C. § 1442(a)(1)

Plaintiff argues that Rolls-Royce is not a "person" under § 1442(a)(1). (Pl.'s Reply at 2-3.) While federal district courts are divided on this issue, the Court agrees with those courts that have held a corporation is a person within the meaning of § 1442(a)(1). See, e.g., Good v. Armstrong, 914 F. Supp. 1125, 1127-28 (E.D. Pa. 1996); Crocker v. Borden, 852 F. Supp. 1322, 1325 (E.D. La. 1994); Fung, 816 F. Supp. at 572; Ryan v. Dow Chemical Co., 781 F. Supp. 934, 936 (E.D.N.Y. 1992). Because Rolls-Royce is a corporation, the Court finds that it qualifies as a "person" under § 1442(a)(1).

2. "Acting Under" a Federal Officer and "Causal Nexus"

To establish that a defendant is "acting under" a federal officer, a federal officer must have had "direct and detailed control over the defendant." Fung, 816 F. Supp. at 572. Further, to establish a "causal nexus," it must appear that the state prosecution has arisen out of the acts done under color of federal authority and in enforcement of federal law. Maryland v. Soper, 270 U.S. 9, 22 (1926).

Here, to support its contention that it was acting under the direct and detailed control of the federal government, defendant offers the affidavit of James L. Dillard ("Dillard"), a retired chief project engineer, and sixteen other exhibits. (See Dillard Aff.) The voluminous materials, however, contain no requirement or even reference to the use of asbestos. Rather, the specifications indicate defendant was permitted to use "standard parts . . . unless they [were] determined by the contractor to be unsuitable for the purpose." (Dillard Aff., Ex. 12 at 365.)

This case thus is distinguishable from cases relied upon by defendant in which the government specified the use of asbestos. See Pack v. AC and S, Inc., 838 F. Supp. 1099, 1103 (D. Md. 1993); Blackman v. Asbestos Defendants (BHC), 1997 WL 703773, *2 (N.D.

1 Cal. 1999). See also Cabalic v. Owens-Corning Fiberglas Corp., 1994 WL 564724 (N.D.
2 Cal. 1994) (remanding on ground that defendant failed to provide evidence that the
3 specifications required the use of asbestos).

4 Accordingly, the Court finds defendant has failed to show that it acted under the
5 direction of a federal officer in using asbestos in the design, manufacture, or testing of the
6 T56 engine or that a causal nexus exists between any government specification and
7 plaintiff's claimed injury. Consequently, defendant cannot rely on the federal officer
8 removal statute as a basis for the Court's jurisdiction, and, accordingly, removal was not
9 proper.

10 **CONCLUSION**

11 For the reasons stated, the Court GRANTS plaintiff's motion to remand.

12 **IT IS SO ORDERED.**

13 Dated: JUN 23 2000


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15 MAXINE M. CHESNEY
16 United States District Judge
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EXHIBIT G

EXHIBIT G

FILED

JUN 20 2000

**RICHARD W. WIEKING
CLERK, U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA**

HENRY PIPPINS,

No. C 00-1356 WHA

Plaintiff,

v

ASBESTOS DEFENDANTS, et al.,

Defendants.

**ORDER 1) GRANTING PLAINTIFF'S
MOTION TO REMAND CASE TO
STATE COURT AND 2) DENYING AS
MOOT PLAINTIFF'S OBJECTION TO
DEFENDANT'S SUPPLEMENTAL
BRIEF IN OPPOSITION**

ENTERED IN CIVIL DOCKET

6/26/02

INTRODUCTION

The Court cannot find on the present record that defendant Rolls-Royce, PLC, during its manufacture of jet aircraft engines for the United States Air Force and Navy, included asbestos in such engines at the direction of an Air Force or Naval officer. On that basis, the Court concludes that no subject-matter jurisdiction exists under 28 USC 1442. Accordingly, the Court **GRANTS** plaintiff's motion to remand the action to state court. The Court also **DENIES** as moot plaintiff's objection to defendant's supplemental brief.

STATEMENT

On March 15, 2000, plaintiff Henry Pippins filed a personal injury complaint in California Superior Court. The complaint alleged, among other things, that plaintiff had been exposed to asbestos during his 36-year career as a jet engine mechanic and materials specialist.

1 One alleged source of such asbestos was the T56 jet engine, which defendant, formerly known as
2 Allison Engine Co. Inc., manufactured for the Air Force and Navy.

3 Defendant removed the action to this Court, arguing that federal-question jurisdiction
4 existed under 28 USC 1442, the federal officer removal statute, "because the action involves a
5 person, *i.e.*, Rolls-Royce, that acted under the authority of an officer or agency of the United
6 States" (Notice of Removal 3:5-6). Plaintiff promptly moved for remand. In opposition to
7 plaintiff's motion, defendant proffered evidence selected to show that "the United States
8 Government was inextricably linked to the design and production of the T56 engine, and it
9 unequivocally directed Allison in all such phases that form the basis of Plaintiff's claims against
10 Rolls-Royce" (Opp. 3:15-17). According to defendant, such evidence demonstrated that:

- 11 • the Air Force and Navy maintained personnel at Allison's plant for the purpose of
- 12 ensuring compliance with the government contract and specifications;
- 13 • the military specifications for the T56 were "specific, detailed and mandatory";
- 14 • the Air Force participated in the design and development of the T56, and made
- 15 recommendations for design improvements; and
- 16 • no changes to the design of the T56 could be made without government design and
- 17 approval.

18 ANALYSIS

19 In this case, removal is premised upon 28 USC 1442, an exception to the well-pleaded
20 complaint rule. *Jefferson County v. Acker*, 527 U.S. 423, 431 (1999). "Under the federal officer
21 removal statute, suits against federal officers may be removed despite the nonfederal cast of the
22 complaint; the federal question element is met if the defense depends on federal law." *Ibid.* To
23 create subject-matter jurisdiction under 28 USC 1442(a), the subsection here at issue, defendant
24 must "(1) demonstrate that it acted under the direction of a federal officer, (2) raise a federal
25 defense to plaintiffs' claims, and (3) demonstrate a causal nexus between plaintiffs' claims and
26 acts it performed under color of federal office." *Fung v. Abex Corp.*, 816 F.Supp. 569, 571-72
27 (N.D. Cal. 1992), citing *Mesa v. California*, 489 U.S. 121, 124-25, 134-35 (1989).

Application of the federal officer removal statute is not limited to cases in which the defendant demonstrates upon removal the meritoriousness of his or her alleged defense. "At the very least, it is broad enough to cover all cases where federal officers can raise a colorable defense arising out of their duty to enforce federal law." *Willingham v. Morgan*, 395 U.S. 402, 406-07 (1969). See also *Jefferson County*, 527 U.S. at 532 (reasoning that federal officer removal statute does not require the federal officer to demonstrate "an airtight case on the merits"). As in all removal scenarios, however, "[t]he burden of establishing federal jurisdiction is on the party seeking removal." *Prize Frize, Inc. v. Matrix (U.S.) Inc.*, 167 F.3d 1261, 1265 (9th Cir. 1999). Accordingly, the Court will remand the action unless defendant demonstrably has satisfied each of the three above-listed conditions.

* * *

As discussed above, defendant argues that it designed and manufactured the T56 "under the authority" of an officer of the United States. Hence, defendant concludes that it is entitled to removal. The Court disagrees, based upon defendant's failure to demonstrate that an officer of the United States directed it to perform those acts that plaintiff alleges to have harmed him.

In its briefs and at oral argument, defendant emphasized that it designed and manufactured the T56 under tight government supervision, that the engine was built to tight specifications, and that such specifications were subject to change only upon government approval. That "the relevant acts occurred under the general auspices of federal direction", however, is not enough to warrant removal. *Good v. Armstrong World Industries, Inc.*, 914 F.Supp. 1125, 1128 (E.D. Pa. 1996), citing *Fung*, 816 F.Supp. at 572. Instead, a defendant seeking removal must demonstrate that it acted "according to the direct and detailed control of an officer of the United States." *Good*, 914 F.Supp. at 1128. With respect to products liability, that usually entails demonstrating "strong government intervention and the threat that a defendant will be sued in state court 'based upon actions taken pursuant to federal direction.'" *Fung*, 816 F.Supp. at 572, quoting *Gulati v. Zuckerman*, 723 F.Supp. 353 (E.D. Pa. 1989).

Plaintiff alleges exposure to asbestos. If defendant's argument is to succeed, defendant must demonstrate a causal nexus between such exposure and acts performed by defendant

1 pursuant to the direction of some federal officer. This defendant cannot do. In the volume of
2 documents submitted by defendant and describing the oversight of the United States government
3 during the design and manufacturing of the T56, the word "asbestos" appears not once. Nor
4 during oral argument could defendant name a single asbestos-containing part that the
5 government directed it to incorporate into the engine. This is not a case where the government
6 "would specify and approve the type of asbestos" integrated into the object of manufacture.
7 *Pack v. AC and S, Inc.*, 838 F.Supp. 1099, 1103 (D. Md. 1993). Nor is it a case in which the
8 government's "drawings and specifications required the use of asbestos materials." *Blackman v.*
9 *Asbestos Defendants (BHC)*, No. C-97-3066, 1997 WL 703773, at *2 (N.D. Calif. Nov. 3, 1997).
10 Rather, this is a case in which defendant was permitted to use "standard parts . . . unless they
11 [were] determined by the contractor to be unsuitable for the purpose" (Dillard Decl., Exh. 12 at
12 365). Defendant thus was free to use whatever standard parts it believed appropriate. No causal
13 relationship has been shown between defendant's alleged choice of asbestos and the
14 government's actual orders to defendant. Hence, plaintiff's motion to remand should be granted.

CONCLUSION

15
16 For the reasons stated above, plaintiff's motion is GRANTED. Furthermore, plaintiff's
17 objection to defendant's supplemental opposition is DENIED as MOOT.

18
19 IT IS SO ORDERED.

20
21 Dated: June 20, 2000

22 
23 WILLIAM ALSUP
24 UNITED STATES DISTRICT JUDGE
25
26
27
28

EXHIBIT H

EXHIBIT H

E-filing

United States District Court
For the Northern District of California

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

THOMAS PIPPINS and
TOMMIE PIPPINS,

No. C 03-3006 WHA

Plaintiffs,

**ORDER GRANTING PLAINTIFFS'
MOTION TO REMAND**

v.

ATLAS TURNER, INC., *et al.*,

Defendants.

INTRODUCTION

In this personal-injury case, defendant Northrop Grumman Corporation has failed to show that it was "acting under" a federal officer when it used asbestos materials in the design of Cougar airplanes for the United States Navy. Removal jurisdiction, therefore, is lacking under 28 U.S.C. 1442(a)(1). Plaintiffs' motion to remand the action is **GRANTED**.

STATEMENT

On September 27, 2002, plaintiffs Mr. and Mrs. Pippins filed an action in state court for personal injuries Mr. Pippins purportedly sustained from asbestos exposure while working as an aviation mechanic on F9F Cougar airplanes at a naval air station in Kansas. The airplanes were manufactured for the Navy by Grumman Aircraft Engineering Corporation, later acquired by defendant Northrop Grumman Corporation. The complaint alleges that, while servicing the aircrafts, Mr. Pippins was exposed to asbestos through the airplanes' brake linings and from asbestos tape and asbestos heat shield insulation (Dep. 92). Although companies other than defendant made all these asbestos-containing components, defendant

1 incorporated them into the airplanes.

2 Defendant removed the action under 28 U.S.C. 1442(a)(1). Defendant contends that it was acting
3 under the government's control when it designed the Cougar aircraft. According to defendant, the
4 government reviewed and approved defendant's design plans and drawings and its contract included
5 detailed specifications on the design of the Cougar. Plaintiffs have now moved for remand.

6 ANALYSIS

7 This case involves the federal-officer removal statute, which allows removal of a state action against
8 "any officer (or any person *acting under* that officer) of the United States or of any agency thereof, sued in
9 an official or individual capacity for any act under color of such office" 28 U.S.C. 1442(a)(1)
10 (emphasis added). To show it was "acting under" a federal officer, a removing party must:

11 (1) demonstrate that it acted under the direction of a federal officer; (2) raise a federal defense to the
12 plaintiff's claims; and (3) demonstrate a causal nexus between the plaintiff's claims and acts it performed
13 under color of federal office. *Fung v. Abex Corp.*, 816 F. Supp. 569, 571-72 (N.D. Cal. 1992) (citation
14 omitted). The burden of establishing federal jurisdiction is on the party seeking removal. *Prize Frize, Inc.*
15 *v. Matrix, Inc.*, 167 F.3d 1261, 1265 (9th Cir. 1999). Accordingly, the action should be remanded unless
16 defendant has satisfied each of the three conditions mentioned above.

17 * * *

18 As this Court has noted before in a similar decision involving the brother of Mr. Pippins, a mere
19 showing that "the relevant acts occurred under the general auspices of federal direction" is not by itself
20 enough to warrant removal. *Pippins v. Asbestos Defendants*, No. 00-1356 at 3 (N.D. Cal. Jun. 20,
21 2000) (citation omitted). Rather, a defendant seeking removal must demonstrate that it acted "according to
22 the direct and detailed control" of a federal officer. *Ibid.*

23 Here, the only instance, at least at the initial design stage, where the Navy may have controlled the
24 choice of Cougar parts was when it specified the Pratt & Whitney J48-P-8A engine to be incorporated.
25 Otherwise, Northrop Grumman was free to submit whatever design it wished. Only upon acceptance by
26 the Navy did the rest of the design become "government-specified." Mr. Pippins, however, allegedly
27 suffered asbestos exposure not from the engine itself, but from the frequently replaced asbestos insulation
28 shields wrapped around the engine, among other things. Hence, to establish that removal was proper

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For the Northern District of California

1 defendant must demonstrate that the Navy directed it to include asbestos materials in the original design.

2 No such showing has been made.

3 Defendant, and not the Navy, furnished the design data and drawings of the aircraft as part of its
4 contracted services (Oberg Exh. 1 at 1). Defendant was responsible for purchasing its own "materials,
5 supplies and subassemblies" and accounting thereafter for the cost of those items (DeBois Exh. 1 at 3).

6 There is no indication that the Navy had any hand in the selection of any asbestos materials. In this respect,
7 defendant has not even shown that the Navy's specifications (after acceptance of the Cougar design)

8 required the use of asbestos materials. In all the documents relating to the Cougar's design, the word

9 "asbestos" appears not once. See *Groombridge v. Asbestos Defendants*, No. 00-01654 at 3 (N.D. Cal.

10 Jun. 23, 2000) (Chesney, J.) (remanding because the defendants failed to submit any materials which

11 required or even referenced asbestos). Instead, defendant's evidence only shows that the Navy directed it
12 to manufacture the Cougar aircraft, and that the Navy "routinely specified" that asbestos materials be used
13 in its aircraft (DeBois Decl. ¶ 15). No evidence is provided that the Navy specifically required the asbestos
14 materials in the brake linings and engine insulation. These parts needed frequent servicing, and in a manner
15 which created the asbestos dust that Mr. Pippins inhaled.

16 As such, this case is distinguishable from *Fung v. Abex Corp.*, 816 F. Supp. 569, 572-73 (N.D.

17 Cal. 1992), where the court found that the defendant company was acting under federal control when it
18 built submarines for the Navy under extensive guidance. In *Fung*, the defendant company was employed
19 to construct Navy submarines according to the Navy's clear specifications in Navy shipyards, where the
20 Navy "monitored [the defendant's] performance at all times." *Id.* at 571, 573. This case, in comparison,
21 does not involve a situation of such direct government control. Unlike the defendant in *Fung*, the record
22 here shows that Northrop Grumman retained significant independent decision-making authority as to the
23 design of the Cougar airplane.

24 Neither does *Willingham v. Morgan*, 395 U.S. 402 (1969), sustain removal here.¹ In that case,
25 the Supreme Court held that federal prison officials had met the "causal connection" requirement for
26 removal by showing that they "were on duty, at their place of federal employment, at all the relevant times"

27
28 ¹ On September 8, 2003, defendant filed a motion for leave to file a sur-reply. The motion for leave is GRANTED. The sur-reply was duly considered.

1 when they allegedly abused the plaintiff prisoner in the process of designing airplanes for the Navy. *Id.* at
2 409. Applied here, defendant argues that it need not show that the Navy specifically ordered that asbestos
3 materials be installed into the airplanes. Instead, defendant contends that the Navy's extensive *general*
4 control of the Cougar's design and maintenance is enough for removal.

5 None of the considerations urging removal in *Willingham* urge removal here. The *Willingham*
6 defendants were federal officers raising the defense of official immunity, and were being sued for acts done
7 on federal property in order to enforce federal law. A main purpose of Section 1442(a)(1) is to allow
8 federal officers to effectively enforce federal law. *Id.* at 406-07. In contrast, defendant here is a private
9 corporation. Its alleged acts occurred on its own property and in fulfillment of a for-profit contract with the
10 Navy. Many courts, moreover, have refused to extend *Willingham*'s holding outside the law enforcement
11 context. *See, e.g., Mesa v. California*, 489 U.S. 121, 133, 138 (1989) (refusing to allow removal where
12 the plaintiffs were federal postal workers charged with criminal driving violations while on duty).

13 The removal point, then, boils down to whether a defendant is entitled to removal for an act that
14 was not specifically ordered by the Navy, but was done in the course of fulfilling the Navy's request for
15 airplanes. For the reasons stated, this order holds that such a generalized removal theory as used by
16 defendant would open the floodgates. This Court construes removal jurisdiction under Section 1442(a)(1)
17 more narrowly.

18 CONCLUSION

19 This order finds that defendant has not sustained its burden of showing a basis for removal.
20 Accordingly, plaintiffs' motion to remand is **GRANTED**. The Clerk will return this case to the state court.
21 Since defendant had a colorable basis for asserting that removal was proper, this order **DENIES** plaintiffs'
22 request for an award of attorney's fees and costs.

23
24 **IT IS SO ORDERED.**

25
26 Dated: September 23, 2003.

27 /s/ William Alsup
28 WILLIAM ALSUP
UNITED STATES DISTRICT JUDGE

EXHIBIT I

EXHIBIT I

ADVANCE COPY

MIL-M-15071D(SHIPS)
6 June 1961
SUPERSEDING
MIL-M-15071C(SHIPS)
10 September 1957

MILITARY SPECIFICATION
MANUAL, SERVICE (INSTRUCTION BOOKS) FOR SHIPBOARD
ELECTRICAL AND MECHANICAL EQUIPMENT

1. SCOPE

1.1 Scope. - This specification sets forth Bureau of Ships requirements for classes and general contents of manuals necessary for the satisfactory operation, maintenance, installation, overhaul and repair, without the services of manufacturer's representative, of electrical, mechanical, hull, interior communication and fire control shipboard equipment. This specification also includes procedures for submission, review, approval and revision of the service manual. The intent is to accept the manufacturer's commercial type of manual or one prepared in accordance with his commercial practice whenever it is roughly equivalent to the detail requirements included herein.

1.2 Classification. - Service manuals shall be of the following classes:

Class A manual - A basic manual covering a family of equipment of the same basic design and one which can be made applicable to a specific equipment manufactured to that basic design by completing sheets and blanks.

Class B manual - A manual covering a specific equipment for which a class A approval has not been obtained.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-D-983 - Drawing, Electrical, Hull and Mechanical Equipment for Naval Shipboard Use.

FSC 7610



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PUBLICATIONS

DEPARTMENT OF DEFENSE

DD Form 441 (Attachment) - Industrial Security Manual for
Safe-guarding Classified Information.

(Copies of specifications and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

OFFICIAL CLASSIFICATION COMMITTEE

Uniform Freight Classification Rules.

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd Street, New York 16, N. Y.)

3. REQUIREMENTS

3.1 Media for final manuals and approval. -

3.1.1 Class A manuals. - Whenever a manufacturer's equipment lends itself to the preparation of a manual covering a family of equipments of the same basic design and one which can be made applicable to specific equipments of that design by completing sheets and blanks, the manufacturer may submit to the Bureau of Ships four copies of the basic manual together with examples of the sheets and blanks which will represent the detailed information to be provided for a specific equipment. Approval of a class A manual will be by the Bureau of Ships only and, once approved, the basic manual shall not be modified without the approval of the Bureau of Ships. At the time of class A manual approval, the Bureau will assign a NAVSHIPS number to the basic manual and forward one copy to the cognizant inspection for future comparison inspection with manuals furnished for specific equipments.

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3.1.1.1 Once approval of a class A manual is granted for a particular basic design of equipment (and size range, if appropriate), the basic manual with the specific detailed information required for the unit of the family being furnished on a contract or order may be supplied by the manufacturer in the quantities required by that order, without further approval. Copies of the manual prepared for the specific equipments shall be marked by the manufacturer with the NAVSHIPS number of the basic manual followed by "-1", "-2" or higher. Each dash number shall be assigned numerically by the manufacturer for each specific equipment of that family.

3.1.2 Class B manuals. - Class B manuals cover a specific equipment for which class A approval has not been obtained. Once a class B manual has been approved by the Bureau or its field representative, the manual shall not be modified without approval of the Bureau of Ships. (NOTE: Bureau of Ships field representative - Where the term "field representative" is used in this specification, it is limited to field representative of the Bureau of Ships, i.e. Supervisors of Shipbuilding, USN, U.S. Naval Shipyards and Industrial Manager, USN.) Whenever a manual for a specific equipment has not been approved previously, for this or a previous issue of this specification, prior to preparing final manuals, the manufacturer shall prepare and submit a sample manual for approval to one of the following activities, as appropriate:

- (a) Manuals procured on Bureau of Ships contracts - Contractor shall forward four sample copies to the Bureau of Ships for approval and assignment of a NAVSHIPS number with a copy of the forwarding document to the cognizant Government Inspector.
- (b) Manuals procured on contracts issued by Naval activities other than Bureau of Ships - Contractor shall forward four sample copies to the Naval activity for approval.
- (c) Manuals procured for the Navy by a commercial activity (such as a private shipbuilder) - Contractor shall forward five sample copies to the commercial activity for approval of both the commercial activity and the cognizant Bureau representative.

3.1.2.1 The Bureau will assign a NAVSHIPS number to each different class B manual as follows:

- (a) Manuals procured on contracts issued by the Bureau of Ships - The NAVSHIPS number will be included in the approval letter.
- (b) Manuals procured on contracts issued by other activities.

EXCLUDED FROM AUTOMATIC DECLASSIFICATION

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The field approving activities may obtain NAVSHIPS numbers from the Bureau of Ships by one of the following methods:

- (a) Submit two copies of the manual prior or subsequent ~~to~~ to the review and approval.
- (b) Permit the manufacturer to forward two copies of the manual to the Bureau simultaneously with the copies for approval.
- (c) In urgent cases, submit a letter containing the nameplate data of the equipment, the ship applicability and contract or order number.

3.1.2.2 Regardless of the method used for obtaining NAVSHIPS numbers, the letter request shall state the expected delivery date of the manuals and the quantity of manuals being furnished for stock.

3.1.3 Emphasis. - The Bureau of Ships is mainly interested in the adequacy and completeness of contents and the clarity and readability of the information rather than the format. The manual shall be oriented toward operation, maintenance and repair of the equipment by the forces afloat, without the services of a manufacturer's representative. The portions devoted to descriptive matter and theory shall be limited to those which are essential to a proper understanding of the equipment for satisfactory operation, maintenance and repair. The text need not duplicate information which is adequately shown on the photographs, drawings and illustrations incorporated in the manual. (A class A or B manual may be the manufacturer's commercial manual, or one prepared in accordance with his commercial practice whenever it will be suitable for the service intended as determined by the approving activity.)

3.1.4 Security classification. - The security classification of manuals shall be as designated by the bureau or agency concerned. If classified, the security guide issued by DD form 254, forming a part of the contract shall be followed. All pages shall be marked in accordance with the requirements of the Industrial Security Manual for Safeguarding Classified Information (DD 441 (Attachment)). Where a minor amount of classified information is involved, two volumes - one unclassified and one classified shall be provided. The word "UNCLASSIFIED" need not appear on each page of unclassified portions of classified manuals. Revisions shall be classified as required by their subject matter. Regardless of the overall classification of a classified publication, an unclassified title shall be assigned whenever possible and consistent with security and clarity. In all cases, however, if a classified manual is involved, the initials of the classification assigned to the title, standing alone, shall be indicated in parentheses immediately following the title, using one of the following notation (U), (C), (S), (TS). In addition, the covers of classified manuals shall include the markings as indicated on figure 1.

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3.1.5 Detail requirements. -

3.1.5.1 Contents. - Manuals shall contain the following information, arranged in an order appropriate to provide adequate instruction for operation and maintenance of each unit in the equipment and the complete assembly: No particular arrangement, format or chapter titles are required as long as the information is suitably presented.

Front Matter
General Information
Installation
Principles of Operation
Operating Instructions
Maintenance and Repair
Parts Lists

3.1.5.2 Front matter. - The front matter shall consist of the following:

- (a) Cover
- (b) Title page (for classified manuals only)
- (c) Approval and procurement record page
- (d) List of effective pages
- (e) Table of contents
- (f) List of figures
- (g) List of tables

3.1.5.2.1 Cover and title page. - The cover shall contain the information on figure 1. The title page for classified manuals shall conform to figure 2.

3.1.5.2.2 Approval and procurement record page. - The approval and procurement record (APR) page shall be the first page of unclassified manuals and shall follow the title page of classified manuals and shall conform to figure 3.

3.1.5.2.3 List of effective pages. - A list of effective pages shall be included. In multiple volume manuals, the list of effective pages shall be included in volume 1 only. The list of effective pages shall be modified whenever revisions are incorporated in copies of the manual.

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3.1.5.2.4 Table of contents. - The table of contents shall list all primary divisions and secondary subdivisions such as chapters, sections and pages with their corresponding numbers. Where sub-manufacturers are furnishing associated equipment and a separate manual is not provided, it shall be the responsibility of the prime contractor to integrate and reflect the information provided by the sub-manufacturers within the table of contents. In multiple volume publications, a table of contents shall be prepared for each volume.

3.1.5.2.5 List of figures. - A list of figures shall be prepared listing all figures, their titles and numbers. In multi-volume publications, a list of figures shall be prepared for each volume.

3.1.5.2.6 List of tables. - A list of tables shall be prepared listing all tables, their titles and numbers. In multi-volume publications, a list of tables shall be prepared for each volume.

3.1.6 General information. - General information shall consist of general data, a general description and detailed descriptions, as necessary to supplement data included in drawings and photographs.

3.1.6.1 General data. - General data shall consist of the following data for each component or unit:

- (a) Descriptive (name plate) data necessary to identify manufacturer, type, model and performance or design characteristics.
- (b) Principal overall dimensions.
- (c) Weight.
- (d) Allowable capacities, temperatures, pressures, settings, tolerances or other salient features as appropriate to the item shall be shown.

3.1.6.2 General description. - General description shall consist of a short general description of the equipment; explain briefly what it is, what it will do, and the general overall and interrelated operation of the various units. All information of a general character applicable to the complete equipment shall also be given. Where the text contains terms or symbols not commonly used, definitions or explanatory notes shall be included.

3.1.6.3 Detailed description. - Detailed description shall contain a complete detailed description of units and assemblies which comprise the complete equipment; for example: ship service turbo generator, the turbine, reduction gear, generator and exciter.

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3.1.7 Installation. - Instructions, if necessary to supplement the installation drawings supplied (in accordance with Specification MIL-D-963), shall consist of methods of installation; including packing or unpacking, handling, preparation of foundation, alignment, precautions, mounting instructions, bolting diagrams, safety guards, grounding or bonding, clearances for access, ventilation, motion under shock, and methods of testing to assure satisfactory installation.

3.1.8 Principles of operation. - Figures, sketches, performance curves, and schematic wiring diagrams shall be included to the extent necessary to provide satisfactory operation, maintenance and repair. Operating sequences of automatic and semi-automatic equipment shall be indicated.

3.1.9 Operating instructions. - Information shall include routines and emergency procedures, and safety precautions, maximum and minimum loads; normal temperatures or pressure limits or both; transfer from manual to automatic operation (or the reverse), to be observed in the starting, operating, stopping, and shutting down of the equipment. In addition, action(s) which should be taken in the event of power failure; control air failure; lube-oil failure; partial failure of equipment; and similar conditions shall be described. Action(s) described in the event of partial failure shall include, where practicable, those procedures necessary to provide continued service of the equipment until time is available to repair the equipment. Where operating procedures are to be performed in specific sequence, step-by-step procedures shall be given. Operations shall be numbered in the order in which they are performed. Tables and charts shall be used for the presentation of these instructions where varying operating conditions are encountered.

3.1.10 Maintenance and repair. -

3.1.10.1 Preventive maintenance. - Instructions shall include all maintenance procedures, inspections, tests, and adjustments which should be performed periodically under shipboard conditions for the purpose of preventing failure or impairment of the equipment. A one page summary and time schedule for maintenance procedures, including a check-off table where appropriate, shall be provided. The summary sheet shall identify any items required by the Navy, as indicated at time of approval action, to be included in the ship's permanent history cards. Where necessary instructions shall include procedures for obtaining access to the sub-components for maintenance. Maintenance instructions shall include, where appropriate, but shall not be limited to the following:

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- (a) A tabulation of periodic, routine, mechanical, and electrical tests and checks which should be accomplished regularly to show that sub-components are operating properly and to insure continuity of service at optimum performance.
- (b) Table or charts, including "wear-limit" charts when appropriate, to indicate what is to be done, when it is to be done based on inspection, and how to do it.
- (c) Utilization of the test facilities which may be incorporated in the various components.
- (d) Instructions for the care, inspection, and cleaning of all pertinent parts.
- (e) Instructions stressing the importance of properly maintaining all safety devices and interlocks provided to prevent damage to equipment or injury to personnel.
- (f) Instructions on lubrication at shipboard operating temperatures shall be provided as applicable, preferably in chart form. They shall include information regarding lubrication recommended by the manufacturer and the type of lubricant to be used. Lubricants shall be described by symbol number, Federal stock number, Military specification and industry standard numbers where applicable and known.
- (g) Instructions on in-place-balancing or other means of reducing noise level if equipment specifications and shipboard application require quiet operation.

3.1.10.2 Trouble shooting, overhaul and repair. - Instructions shall include all information necessary to permit a technician to locate trouble, and to make repairs, adjustments and conduct tests of each component, assembly or sub-assembly of the equipment. The following shall be included:

- (a) Trouble shooting guides for the localization of faults giving possible sources of trouble, the symptoms, probable cause, and instructions for remedying the faults.
- (b) Complete instructions on signal tracing for electric circuits, use of special test instruments and unusual servicing techniques;
- (c) Ample figures and sectional views giving details of mechanical assemblies, and simplified schematic diagrams of electrical, mechanical, hydraulic and pneumatic circuits. Figures contained elsewhere in the manual may be used and referred to under this heading without duplicating them.

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3.1.11 Parts list. - The parts list shall include identification data covering all repair parts to facilitate ready identification of parts for replacement and ordering purposes. Standard hardware, structural parts, or other parts which have no maintenance significance shall not be listed.

3.1.12 Special tools. - A separate list of "special tools" which are supplied with the equipment shall immediately follow the parts tabulation; this list shall contain only tools that are peculiar to the equipment showing the quantity, unit of issue (each, pair, set), description, and manufacturer's identification number. A photograph or sketch showing each special tool as it is being used, shall be included in the manual.

3.1.13 Photographs and drawings. - As the preferred alternate to lengthy, detailed discussions, the manual shall make maximum use of shop photographs, with parts annotated for identification. Photographs may be half-tones or glossy prints. Manuals shall contain reproductions of drawings, additional block diagrams and schematic drawings as necessary to supplement the descriptive matter contained in the text. In every case, a drawing or photograph of the assembly shall be included. Diagrams of switches and relays used in the system showing the terminal numbering shall be inserted as additional drawings. Photographs and sketches shall be included wherever necessary for identification of the parts in the "parts list". Other figures shall be included to supplement or extend the information contained in the photographs and drawings as required for further identification of parts and explanation of the descriptive information contained in the text.

3.2 Format. -

3.2.1 Volumes. - Manuals shall be divided into volumes and by chapters or sections as necessary to provide ready handling and to present orderly instructions for operation and maintenance of the equipment, depending on the size and complexity of the manual.

3.2.2 Numbering. - Any section, chapter, page and paragraph numbering system which facilitates adequate indexing and rapid location of pertinent information is acceptable.

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3.3 Text.

3.3.1 Wording. - The text shall be factual, specific, concise, and clearly worded to be readily understandable by personnel involved in the operation, repair, overhaul and maintenance of the equipment, and to provide sufficient information for technicians to install, operate, service, and maintain the equipment at peak performance without the services of a manufacturer's representative. Technical phraseology requiring a specialized knowledge shall be avoided except where no other wording will convey the intended meaning, in which case the technical term shall be defined.

3.3.2 Level of writing. - As a general guide, the level of writing should be that for a high school graduate having specialized training as a technician through Navy training courses.

3.3.3 Figures. - Sectional views of assemblies, sub-assemblies and the component parts thereof shall be shown as necessary to supplement the text, photographs, and drawings and aid in the identification of parts. Identification of illustrated parts with listed parts shall be facilitated by the use of index (or place) numbers and arrows which will identify assemblies, sub-assemblies and component parts thereof.

3.3.4 Indexing and referencing of figures. - Significant features or components of figures shall be identified by brief applicable nomenclature with arrows. Index (or place) numbers may be used on figures when an extremely large amount of nomenclature is required.

3.3.5 Deleted figures. - When a change requires deletion of a figure without substitution of another, the following sentence shall be inserted "Figure _____ deleted" in or near the place of deletion.

3.3.6 Notes, cautions and warnings. - Notes, cautions and warnings should be used to emphasize important and critical instructions. The use should be as sparing as is consistent with real need. When used, notes, cautions and warnings should immediately precede the applicable instructions and shall be selected in accordance with the following definitions:

- (a) "NOTE" - An operating procedure, condition, etc., which it is essential to highlight.
- (b) "CAUTION" - Operating procedures, practices, etc., when if not strictly observed, will result in damage or destruction of equipment.
- (c) "WARNING" - Operating procedures, practices, etc., which will result in personal injury or loss of life if not correctly followed.

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3.4 Applicability of manuals. -

3.4.1 Identical. - When a class A manual covering a specific equipment or a class B manual which is already available, is applicable in its entirety to the equipment being procured, the applicability is to be extended to include the additional ships by the manufacturer issuing an approval and procurement record page. Copies of the manual required for the ship(s) and local use may be requisitioned from stock by the cognizant Naval supervising activity.

3.4.2 Identical except for minor modifications. - When a class A manual covering a specific equipment or a class B manual is applicable to the equipment being procured except for minor differences, the manufacturer shall modify the manual to cover the differences by the issue of revised or supplementary pages. All revisions to an existing manual shall be approved by the Bureau of Ships, shall require the assignment of a change number, assigned by the Bureau of Ships, and shall be issued by the manufacturer with an approval and procurement record page.

3.5 Revisions. - Revisions to manuals which have been previously distributed shall be prepared as follows:

- (a) New pages - New pages shall be issued when it is found necessary to include new information to augment the content of the original manual.
- (b) Revised pages - Revised pages shall be issued to make changes which apply uniformly to all equipments covered by the manual.
- (c) Supplementary pages - Supplementary pages shall be issued when necessary to provide alternate instructions applicable only to a portion of the total equipments covered by the manual because of minor modifications or minor differences in related components.

3.5.1 Legend for revisions. - All new, revised or supplementary pages shall include the words "new", "revised" or "supplementary", the date and a change number.

3.5.2 Submission for approval. - Four copies of each revision shall be submitted to the Bureau for approval and assignment of a change number. The forwarding letter shall include the number of stock copies and the estimated delivery date of the final copies.

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3.6 Production requirements. -- Detail materials, printing procedures and assembly for each manual shall be as approved at time of class A or B manual approval. An acceptable arrangement is set forth in the appendix of this specification. Alternate arrangements will be approved if equivalent performance is provided.

3.7 Distribution requirements. -- Unless otherwise specified in the contract or order, distribution of all manuals not exactly identical to one previously procured and assigned a NAVSHIPS number shall be as follows:

- (a) Two copies for each equipment shall be packed with the equipment when the equipment is shipped to stock.
- (b) Two copies for each equipment shall be shipped separately to the cognizant Naval supervising activity marked for each ship on which the equipment is to be installed.
- (c) Two copies to the Bureau of Ships.
- (d) Three copies to the cognizant Supervisor of Shipbuilding when the equipment is to be installed by a private shipyard. (These copies are in addition to the copies for placement on board the ship.)
- (e) Two copies to the Naval shipyard when the equipment is to be installed by that activity. (These copies are in addition to the copies for placement on board the ship.)
- (f) One copy to each U.S. Naval Shipyard except Pearl Harbor and Portsmouth Naval Shipyard (total of nine).
- (g) Two copies to Pearl Harbor Naval Shipyard (for submarine and surface ship equipment).
- (h) Two copies to Portsmouth Naval Shipyard (for submarine equipment only).
- (i) One copy to all active submarine tenders (submarine equipment only).
- (j) One copy to Submarine Bases, New London and Pearl Harbor (submarine equipment only).
- (k) Two copies to Commanding Officer, Ships Parts Control Center, Mechanicsburg, Penn.
- (l) One copy to Naval Supply Centers, Norfolk and Oakland.
- (m) One copy to Naval Supply Depot, Clearfield, Odgen, Utah.
- (n) One copy to Forms and Publications Supply Office, Byron, Georgia.

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- (c) Manuals for stock shall be in the following quantities:

<u>Number of equipments</u>	<u>Number of copies</u>
1 to 25	25
26 to 99	50
100 and over	100

These manuals shall be shipped to:

Receiving Officer, Naval Supply Depot, Mechanicsburg, Penn.
Marked for COG I stock.

- (p) Copies of approval and procurement record pages in accordance with paragraph 3.10.

3.8 Unless otherwise specified in the contract or order, (where manuals are not to be drawn from stock, see 3.4.1) distribution of all manuals exactly identical to ones previously approved shall be as follows:

- (a) Two copies for each equipment shall be packed with the equipment when the equipment is shipped to stock.
- (b) Two copies for each equipment shall be shipped separately to the cognizant Naval supervising activity marked for each ship on which the equipment is to be installed.
- (c) Copies of approval and procurement record pages in accordance with 3.10.

3.9 Revisions. - Revision pages shall be distributed to all activities receiving the original manual, and in the same quantity.

3.10 Approval and procurement record page. - This page shall be included in all copies of the manuals and additional copies distributed as follows:

- (a) Two copies to Bureau of Ships.
- (b) One copy to Forms and Publications Supply Office, Byron, Georgia.
- (c) One copy to Ships Parts Control Center, Mechanicsburg, Penn.

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3.11 Military Assistance Program Ships. - Unless otherwise specified in the contract or order, distribution of all final manuals for ships being constructed, reactivated, converted or otherwise readied for transfer under the Military Assistance Program (MAP) shall be as follows:

- (a) Two copies for each equipment shall be shipped separately to:
 - 1. the cognizant Naval supervising activity marked for each ship on which the equipment is to be installed.
- (b) Six copies per equipment for each ship to be transferred under MAP to a foreign government. These copies shall be sent to the Military Assistance Advisory Group (MAAG) of the recipient country for delivery to the foreign government which is to receive the ships.
- (c) One copy to the Washington, D. C. Naval Attache of the foreign government to receive the ships.
- (d) Two copies to the Bureau of Ships.
- (e) One copy to the cognizant Supervisor of Shipbuilding when the equipment is to be installed at a private yard.
- (f) One copy to the Commanding Officer, U. S. Navy Forms and Publications Supply Office, Byron, Georgia.
- (g) Twelve copies to Receiving Officer, U. S. Naval Supply Depot, Mechanicsburg, Penn., marked for COGI stock.

4. QUALITY ASSURANCE PROVISIONS

4.1 Contractor responsibility. - The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examinations shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Inspection. - Sample copies shall be inspected to determine compliance with the requirements of this specification and for equivalence with the approved (when applicable) sample or basic manual. (If any subsequent issue of manuals is not equivalent to or better than an approved class A manual; class A approval may be withdrawn.)

Exhibit E (Cont.)
Part 2

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4.3 Content. - The content of the manual shall be checked against the equipment being furnished to assure that it depicts accurately and adequately the equipment and the operating and maintenance procedures required. The NAVSHIPS number on the manual shall be checked for agreement with the NAVSHIPS number on the equipment identification plate where specified.

5. PREPARATION FOR DELIVERY.

5.1 Packaging and packing. -

5.1.1 Individual and multi-volume manuals. - Individual copies and multi-volume manuals shall be packed to preclude damage to material. Multi-volume manuals shall be furnished as complete sets.

5.1.2 Manuals shipped with equipment. - When two copies of the manual are packed with the equipment they shall be packed within the shipping container holding the main unit of equipment. The manual(s) shall be so placed that they are readily accessible prior to removing the equipment and shall not be placed within the vaporproof barrier material used to enclose the equipment. Manuals accompanying equipment shall be packaged in a water-proof container. The invoice packing list or bill of lading shall include the NAVSHIPS number of the manual, the quantity and shall indicate which container includes the manuals.

5.1.3 Bulk shipment. - Manuals shipped in bulk shall not be individually wrapped. Containers shall comply with the Uniform Freight Classification Rules or other carrier regulations as applicable to the mode of transportation.

5.2 Marking. - On bulk shipments, interior packages and exterior shipping containers shall be marked with the following information for each item enclosed, except for shipment of an individual copy or an individual set of manuals:

Box (number) of (number)	(to be listed on multiple container shipments)
NAVSHIPS number	(manual number)
Quantity	(in package)

The words "FOR STOCK" shall be endorsed on the package or packages destined for stock, unless otherwise specified. NAVSHIPS numbers shall be indicated on the shipping documents. When a contract or order requires manuals having different NAVSHIPS manual numbers, the stock copies of each manual number shall be shipped separately.

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6. NOTES

6.1 Ordering data. - Equipment specifications and procurement documents shall specify the following:

- (a) Title, number and date of this specification.
- (b) Quantity of manuals or APE pages required, delivery date and delivery destinations (see 3.7 through 3.11 inclusive).

6.2 Classes of manuals. - The class of manual need not be specified in equipment specifications or procurement documents. The intent is that the manufacturer shall supply class A manuals for any equipment for which ~~the~~ has received class A manual approval. He shall supply class B manuals wherever he has not been granted class A approval.

6.3 Use of term "Service Manual". - Manuals to this issue of the specification are identified as "Service Manuals", instead of "Technical Manuals" since past use of the work "Technical" tended to denote a comprehensive, expensive, theoretical and engineering document whereas all that is necessary is a document that provides for satisfactory operation, maintenance and repair.

6.4 Elimination of types. - Previous issues of this specification have established different types for manuals. Types have been eliminated from this issue. The content and make-up of each manual should be tailor-made to delineate the particular operation and maintenance procedures required.

6.5 Rights in data. - Wherever unlimited rights in data are not obtained, the manual should eliminate all proprietary information if operation and maintenance suitability is not thereby reduced. If proprietary information is required to be included and only limited rights in data are obtained, a restrictive clause per ASPR Section 9 should be included on the cover of each manual for ready identification.

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Notice. - When Government drawings, specifications or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Preparing activity:
Navy - Ships
(Project 7610-N014Sh)

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APPENDIX

10. SCOPE

10.1 This appendix covers the requirements for the production of service manuals.

20. REQUIREMENTS

20.1 Quality. - All manuals furnished will be subject to 35-mm micro-filming. Letters, lines and symbols shall be of a uniform contrast throughout the documents. Blurred or smudged printing or drop out of characters or lines shall be cause for rejection of the publication. Characters shall be no smaller than 8 point type.

20.2 Typography. - Preferred typography is set forth in table I. When revisions are made to the basic manual, the typography shall conform as nearly as possible to the original manual.

Table I - Typography for 8 1/2 by 11 inch manual.

Use	Type style and size	Capitalization	Leading	Spacing between units
Security classification A condensed	Gothic 12 pt*	Capitals	6 pt.	
Chapter or section titles	Same type as text	Capitals	6 pt.	48 pt. Following marginal copy, text of illustration 18 pt. Preceding text or illustration
Primary side heads	Same type as text	Capitals	2 pt.	6 pt. Preceding or following text
Subordinate side heads	Same type as text	Capitals	1 pt.	6 pt. Preceding or following text
Figure and table titles	Same type as text	Capitals and lower case	2 pt.	6 pt. Following illustration

* If 14 pt. is not available, next smaller size shall be permitted.

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Table I - Typography for 8-1/2 by 11 inch manual (cont'd)

Use	Type style and size	Capitalization	Leading	Spacing between units
Notes and cautions	Same type as text	Capitals centered	-----	4 pt. Preceding and following text
Warnings	Same type as text	Capitals centered	-----	4 pt. Preceding and following text
Text, table of contents, list of illustrations etc.	Book face (roman) bold 10 pt.	Capitals and lower case	1 pt.	12 pt. Preceding illustration or following figure title
Keys or legends	Book face (roman) italics 8 pt.	Capitals and lower case	1 pt.	8 pt. Preceding or following notes, cautions, warnings
Parts breakdown listings	Book face (roman) 8 pt.	Capitals and lower case	1 pt.	6 pt. Preceding figure title or following illustration
Footnotes	Book face (roman) bold 8 pt.	Capitals and lower case	1 pt.	12 pt. Preceding text
				6 pt. Preceding bottom rule or following headings

NOTES

1. It is not the intent of this appendix to qualify the methods or composing equipment to be used, but to specify results required.
2. Leading and spacing may be relaxed where circumstances require such alterations.
3. The above requirements are for type that will reproduce same size. When oversize pages are used, type shall reduce to approximately these sizes.
4. All type specified may be plus or minus 1 point, except that 8 point type shall be the minimum allowable size.

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in

NOTES TO TABLE I (cont'd)

5. The type faces listed below are the most preferred. They are available in linotype or can be closely matched on office composing machines.

Book face (Roman)

Garamond

Modern

Bookman

Tribune News

Times Roman

Antique

Baskerville

Century

6. Type sizes as indicated in the requirements were selected for conservation of space and legibility and should not be changed except:

- (a) When oversize pages are prepared.
- (b) When unusual copy fitting problems arise.

20.3 Layout.

20.3.1 Text pages. - The preferred layout of 8-1/2 inches by 11 inches text pages is two columns 20 picas wide and 54 picas deep, making an overall page image size of 42 by 80 picas. The text and illustration areas shall conserve space without lessening clarity or legibility. Blanks and spaces shall be avoided, except on fold-ins, and the first major division of the manual (chapter or section) shall be a new odd page.

20.3.2 Fold-ins. - Fold-in pages shall be used only for diagrams, drawings or charts which cannot be reduced for satisfactory presentation on a single page, or when frequent reference is required from other pages of the book. Aprons are required. When fold-in pages are used, they should be held to a two-page fold-in whenever practicable and shall not exceed an overall length of 34 inches from the binding edge including the apron. The apron may contain information pertaining to the diagram, drawing or chart.

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20.4 Form-punching and drilling. - Service manuals shall be prepared in looseleaf form unless otherwise specified or approved. Looseleaf publications and revisions shall be punched for looseleaf binding with three holes one-fourth inch in diameter and four and one-fourth inches center to center (for 8-1/2 by 11 inch pages) or with such other drilling or punching as specified. Punching of revision pages shall be the same as punching of the original manuals.

20.5 Size. - Suggested sizes for final form of service manuals follow:

4-3/8 by 6-3/4
8-1/2 by 11

All dimensions are in inches.

20.6 Paper stock. -

20.6.1 Text pages. - Paper stock for text pages shall be as specified in 20.6.1.1 or 20.6.1.2.

20.6.1.1 Lithography. - Paper stock shall be white offset book free from unbleached or ground woodpulp and shall have a substance weight of not less than 100 pounds per 1,000 sheets; basis 17 by 22 inches.

20.6.1.2 Letterpress. - Paper stock shall be equivalent to white super-calendered book containing not to exceed 5 percent unbleached chemical wood or ground woodpulp; the remainder to be bleached chemical woodpulp, and shall have a substance weight of not less than 90 pounds per 1,000 sheets, basis 25 by 38 inches.

20.6.2 Fold-ins. - Paper stock for fold-in pages shall be equivalent to high wet strength lithographic map, free from unbleached or ground woodpulp, and shall have a substance weight of not less than 48 pounds per 1,000 sheets, basis 17 by 22 inches.

20.6.3 Binders. - Binders shall be of plastic or pressboard and shall accommodate looseleaf manuals punched or drilled as specified in 20.4 and shall facilitate insertion or replacement pages. Commercial type fasteners are to be used. Information to be included on the binders shall not be stamped with gold or any other metal foil. Binder colors for unclassified manuals shall be any color except yellow or red. Binders for confidential manuals shall be red. Binders for secret and top secret manuals shall be yellow.

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NAVSHIPS 000-00
SECURITY CLASSIFICATION

VOLUME 1 OF 11

NAV
SEC

NAV
SEC

NAV

TITLE OF MANUAL (U)

GROUP CLASSIFICATION MARKING (*for classified manuals, See DD254*)

SECURITY CLASSIFICATION

REPRODUCED AT THE NATIONAL ARCHIVES
REF ID: A63442

NAVSHIPS 000-000
SECURITY CLASSIFICATION

MIL-M-15071D(SHIPS)
VOLUME I OF III

TITLE OF
MANUAL
(U)

WARNING: This document contains information affecting the national defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C., Sections 793 and 794. The transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

SECURITY CLASSIFICATION

Figure 2 - Title page.

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17-00000-00000

W-10770(ENR)

Approval Authority shall specify the applicable letters or correspondence granting approval in accordance with approval procedures.

Remarks space shall be used for necessary comments and the inclusion of information regarding the extension or a denial by other services.

Certification: One of the following certification paragraphs shall be typed in this space, as appropriate:

For Class A manuals, covering specific equipment:

It is hereby certified that ENRITIS is identical to the basic manual ENRITIS approved by the approval data shown above except for the detailed information required for the equipment provided under contract or purchase order.

For selected Class B manuals:

It is hereby certified that ENRITIS to be provided under contract or purchase order has been approved by the approval data shown above.

For identical Class A manuals, covering specific equipment and Class B manuals:

It is hereby certified that the manuals to be provided under contract or purchase order are exactly identical to ENRITIS approved by authority of approval data shown above.

For Class A manuals, covering specific equipment and Class B manuals which have been previously approved but require minor modification:

It is hereby certified that the manuals to be provided under contract or purchase order are exactly identical to ENRITIS approved by the approval data shown above except for the necessary modification as shown in the above remarks space.

NOTE: This page may be typed and returned to the approval authority and shall be included in the Class A manuals and copies of Class B manuals.

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APPROVAL AND PROCUREMENT RECORD PAGE

APPROVAL DATA: ENRITIS
 TYPE OF MANUAL:

APPROVAL AUTHORITY:

COMPARISON OF ENRITIS CHARTER OF CONDUCT OF BUILDING
 PURCHASE ORDER APPROVALS: MANUALS EQUIPMENT: VAND

REMARKS:

CERTIFICATION:

DATE:

CLASS NO.

MANUFACTURER'S AUTHORITY
 MANUFACTURER'S NAME AND
 ADDRESS
 FEDERAL GOV NUMBER (FON)
 007100

Figure 3 Approval and procurement record page

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SPECIFICATION ANALYSIS SHEET

Instructions

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Bureau of Ships.

This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be

procured with a minimum amount of delay and at the least cost.

Comments and the return of this form will be appreciated.

Fold on dotted lines on reverse side, staple in corner, and send to Bureau of Ships, Specifications and Standardization Branch, Washington 25, D.C.

Specification

Organization

City

State

Contract No.

Quantity of items procured

Dollar Amount

Material procured under a direct Government contract

☐

or a subcontract

☐

1. Has any part of the specification created problems or required interpretation in procurement?

a. Give paragraph number and wording

b. Recommendations for correcting the deficiencies

2. Comment on any specification requirement considered too rigid

3. Is the specification restrictive?

If the answer is "yes", in what way?

☐

Yes

☐

No

4. Remarks (Attach any pertinent data which may be of use in improving this specification. Place this form and papers in an envelope and send to the Bureau)

Submitted by (Print name and activity)

Date

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Fold

DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

OFFICIAL BUSINESS

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CHIEF, BUREAU OF SHIPS
SPECIFICATIONS AND STANDARDIZATION BRANCH
DEPARTMENT OF THE NAVY
WASHINGTON 25, D. C.

POSTAGE AND FEES PAID
NAVY DEPARTMENT

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